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THE IRON AGE

THURSDAY, AUGUST 4, 1904.

Chicago's Underground Freight Railroad.

Of the 2,000,000 people in the city of Chicago, scarcely 1 per cent. are aware of the fact that every time they cross a downtown street they are crossing over an underground railroad, through which cars laden with freight will shortly be flying about at the rate of something like 20 miles per hour.

Although the authorities in charge of the Illinois Tunnel Company's operations disclaim any intention on their part to work in secrecy, it is a fact that many miles of tunnel were completed before even the Chicago daily papers were aware of it. To-day there are 22 miles of tunnel completed, the floor of which is $46\frac{1}{2}$ feet below the

possibly pneumatic tube systems. The wire cables of the Illinois Telephone Company have already been installed, but the chief function of the tunnel will be for transferring freight and coal to and from docks and freight depots connecting with points in the district served. These underground conduits or tunnels will be connected with the surface by means of vertical shafts equipped with elevators of sufficient size to carry the cars in use in the tunnel. At other points inclines will connect with the surface, and on these inclines the freight cars will be hauled by their own underground locomotives. In this way all the leading wholesale and retail merchandising establishments, office buildings, manufacturing plants, and, in short, all enterprises calling for the transfer of any considerable quantity of coal or freight, will be put in immediate connection with the underground service.

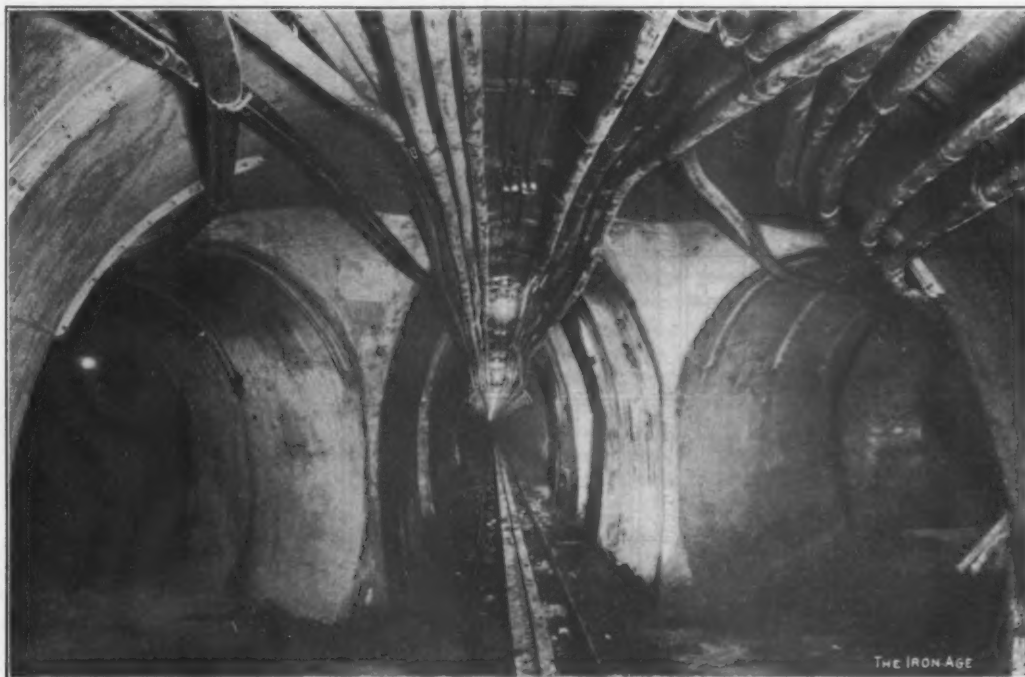


Fig. 1.—View of Intersection of Fifth Avenue and Monroe Street, Showing Telephone Cables at the Top and Track on the Floor.

CHICAGO'S UNDERGROUND FREIGHT RAILROAD.

street level, the tunnels underground corresponding to the streets above and having name plates on the street intersections, the same as above ground. This great depth underground was required by the city in order to leave sufficient space above the tunnel for a street car subway at some future time. This engineering feat was performed practically under the direction of one man, George W. Jackson, general manager and chief engineer of the company, who has devoted his nights and days to it from its inception; while the other problems incident to the administrative and finance work were conducted almost single handed by Albert G. Wheeler, president of the company. These two men have carried on this great undertaking, assisted, of course, by a corps of experts in their various departments, but everything to the smallest detail had to pass their inspection and meet their approval.

The promoters of the tunnel are proud of the fact that during the whole process of construction there was not a man injured, and there was not a complaint from any citizen or property owner. The work was done entirely underground; there was no excavating of streets and no interference with traffic in any way.

The purpose of this tunnel is two-fold. Primarily it was intended only for carrying telephone cables and also

The map that accompanies this article, Fig. 2, indicates the extent to which the tunnel has been completed, and it also indicates something that is realized by few citizens of Chicago—namely, that just south of the downtown district is another district of about equal size which is almost entirely occupied by railroad through lines and switch tracks. The shaded portions of the map indicate railroad property representing the terminal of some 25 railroad lines, aggregating 35 per cent. of the total railroad mileage of the United States. The streets under which the tunnel runs are marked by a heavy black line.

Dimensions of the Tunnel.

Inasmuch as 90 per cent. of all the freight hauled is of a size and character permitting it to pass through a freight car door, the bore of the underground tunnel was made of such a size as would permit cars which run in it to carry any goods that will pass through a car door.

The main or trunk line tunnels are 14 feet 6 inches from apex to floor and 12 feet 9 inches wide at the base, while the laterals and smaller tunnels are $7\frac{1}{2}$ feet high and 6 feet wide. The trunk tunnels have 18-inch cement walls and 21-inch cement floors, and the smaller tunnels have 10-inch walls and 13-inch floors. At the top and sides of these tunnels are strung cables containing tele-

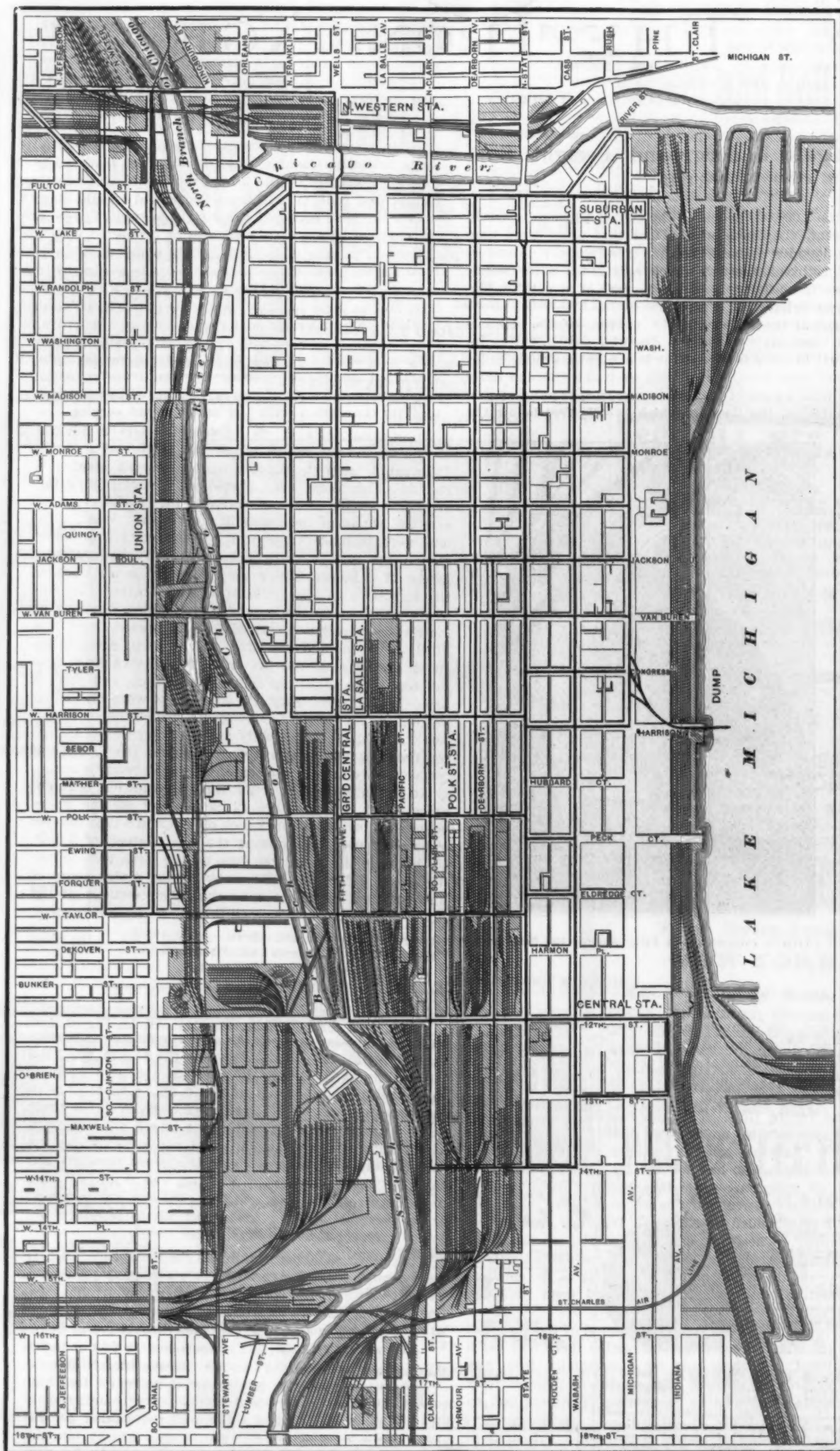


Fig. 2.—Map of Chicago, Showing the Lines of the Illinois Tunnel Company.—The Streets Used Are Indicated by a Heavy Black Line.

phone wires, while the floors are left free for freight traffic, as shown in Fig. 1.

The cables already installed are sufficient to accommodate about 10,000 telephone subscribers. From the main tunnel 3-foot branches or drifts are run upward to the buildings to be served by the telephone system, thence through the buildings by means of pipes or conduits of suitable size. There is also room in the tunnels for pneumatic tube service. It is estimated that it will be necessary to extend the present system until it embraces 60 miles of tunnel in order to connect the stockyards and other important outlying distributing centers.

Originally a Telephone Proposition.

The original ordinance granted by the City Council permitted the promoters of what was then known as the Illinois Telephone Company to tunnel underneath the streets and alleys of the city of Chicago, using a bore of sufficient size to permit them to carry wire cables to supply 100,000 telephones, and on this basis plans were



Fig. 3.—A Partially Completed Conduit, Showing the Cementing Process.

CHICAGO'S UNDERGROUND FREIGHT RAILROAD.

drawn and submitted to the city engineer, John Ericson. Evidently the promoters of the enterprise had in mind from the first the freight proposition, for they made the tunnel of a size considerably larger than would be necessary for carrying their telephone wires, and in July, 1903, they succeeded in passing through the City Council an ordinance permitting them to make certain necessary changes in their tunnel to adapt it to the carrying of freight. At this time a move was made on the part of the company to increase its capital stock, and in March, 1904, the Illinois Tunnel Company, a new corporation, with an authorized capitalization of \$30,000,000 and an authorized bond issue of \$30,000,000, took over the Illinois Telephone & Telegraph Company. The officers of the new corporation are: President, Albert G. Wheeler, Chicago; vice-president, C. D. Simpson, Scranton, Pa.; general manager, George W. Jackson, Chicago; secretary, Edward W. Gearhart, Scranton, Pa.; treasurer, James C. Law, Pittston, Pa.

Active work on excavation was begun September 1, 1901. After satisfying himself as to the nature of the subsoil, Mr. Jackson, the engineer, decided to adopt the pneumatic system of excavation, not so much because that system was necessary for working in the blue clay which they encountered, but as a safeguard against labor

troubles, because, with the excavation under air pressure, there would be no danger of caving in or collapse should the men go on strike for a period of time. A system of air locks was placed just outside of the several shafts. These air locks had iron doors with frames imbedded in the concrete, the space included in the locks between these doors being sufficient to accommodate as many as ten working cars. When a car or train was admitted through the outer door, that door was closed after it and air under pressure was admitted into the lock from the incomplete tunnel, equalizing the pressure in the lock and the tunnel. The inner door opening into the tunnel was then opened and cars run on the headings. In locking out the process was reversed, the inner door being closed and the air being allowed to escape through a valve from the outer door into the atmosphere before attempting to open the outer door. Fig. 3 shows one of the 6 x 7½ foot conduits partially completed. It will be seen that the actual bore in the clay was dug considerably larger than the dimensions of the finished tunnel. The mining was done by men with hand tools, the materials being removed by mule teams, as will be described later. After the excavators finished each day's work the cementing gang followed. Their first task was to place in the bottom of the tunnel the required layer of concrete, thoroughly tamp it, and lay on top of it a lagging of boards. This done, they placed at intervals of 3 feet steel ribs formed of 3-inch channels, the ribs being of the size and shape of the inside of the tunnel. When these ribs were in place lagging of 2-inch planks was placed behind them and concrete packed in behind the lagging in layers of 6 inches, filling up the entire space between the lagging and the walls of the excavation. In this way subsidence of the ground was avoided, because, no matter how irregular was the mining, every void was filled. This method of filling and tamping concrete between the lagging and the sides of the excavation was followed clear to the top or key of the arch, and here, to insure absolute accuracy, the key blocks were formed on lagging boards only 3 feet long, the use of the short section insuring greater density and accuracy of work. After the ribs and lagging were removed the plates of concrete were given a coating of cement, forming a seal.

In the large bore or trunk lines a somewhat different process was followed, No. 12 gauge steel lagging plates being used instead of the 2-inch planks, and 5-inch channel irons were used for forming the ribs instead of 3-inch. In this way, the work was done on the large bore in sections only 3 feet long, the steel lagging plates being of just sufficient length to span the 3-foot sections of the ribs. Fig. 4 shows this work in process of development. In the foreground the cement has hardened and the lagging plates have been removed, each plate showing its imprint on the surface of the conduit. In the background lagging plates are still shown in position, being held there by cross pieces and braces.

This work was carried on by three shifts of men, working eight hours each, the first two shifts doing mining work and the third shift doing the concreting. The miners averaged 21 feet in the two shifts in each of the 14 headings. Twenty miners could work at once in each heading. About 850 men were engaged in the three shifts. In this way the tunnel was mined and cemented at the rate of more than 300 feet per working day, or considerably over a mile a month. More than 300,000 cubic feet of material was excavated, and about half that quantity of stone, cement and gravel was put in place. There were as high as 38 connections to be made between different headings, and so accurately was the surveying done that in no instance did the work vary as much as an inch. A pressure of about 8 pounds per square foot was maintained throughout the tunnel during the whole of the construction period.

Getting Rid of Excavated Material.

A great problem in the prosecution of this work was that of getting rid of the material excavated. It was, of course, imperative that this material be taken away as rapidly as it would be mined. This was accomplished in two ways: First, by a number of head houses at the street curbs, as illustrated in Fig. 5, to which the loaded cars were elevated through vertical shafts and dumped

into wagons. This work was done almost altogether at night, to avoid congestion of other traffic on the streets, and the wagons were hauled over the viaducts spanning the Illinois Central Railroad tracks to the portion of the lake front that is now being filled in for Grant Park. Here the wagons were dumped in a novel way, a stiff legged derrick being used for the purpose. The first hoist of the derrick lifted the board sides off the wagons, and the second lifted the wagon bed with its load into the air, and swung it round to the point where it was desired to dump the material, and by disconnecting the chains on one side of the load the clay was dumped. The second plan was to construct an incline at the terminus of shaft No. 8, at Harrison street and the Chicago River, and to draw the cars up this incline by means of an endless chain to the dock front, where they were pushed by hand on gang planks which extended over scows moored to the river bank. In order that these gang planks should not interfere with navigation of the river,

nel. The valuation of horses and vehicles is placed at more than \$50,000,000. The method in which the present trucking system will be relieved by the tunnels is illustrated in the case, for instance, of Marshall Field & Co., who have both their wholesale and retail departments in the down town district. They are now compelled to handle thousands of tons of freight by drays, most of which can be transferred through the tunnel system. Inasmuch as shafts, at the bottom of which will be underground switching tracks, will be sunk at all the freight receiving and shipping points and at both the wholesale and retail establishments of such large concerns, it will be a matter of a great saving in time and doubtless of money to have all transferring done from all sources through the tunnel.

One of the most serious burdens to the street room of the down town district is the coal traffic. It is stated authoritatively that, of the 100 great office buildings in the district through which the tunnels ramify, not one has

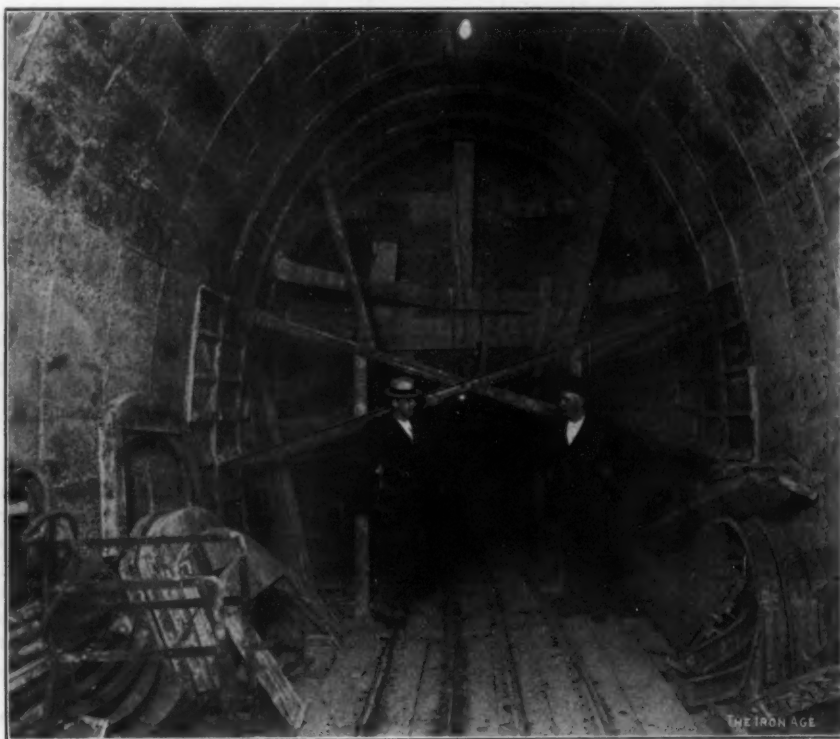


Fig. 4.—Method of Lagging and Concreting the Large or Trunk Tunnels.

CHICAGO'S UNDERGROUND FREIGHT RAILROAD.

they were hinged at the dock's edge, so that they could be raised out of the way when not in use.

Very small construction cars on a very narrow gauge were adopted for construction purposes. It was a double track system, in which light rails were set 14 inches apart. The cars were 20 inches wide and 48 inches long. Experience proved the wisdom of this move, because there was never any stoppage in the disposition of materials owing to cars becoming derailed or becoming stuck in the passage, for the reason that cars could be set on the track by a man should they become derailed. About 900 cars of this character were made and used in the tunnel, and several hundred mules were used in hauling the trains back and forth. By this method the excavated material was kept moving without interruption.

What the Tunnel Means to Chicago.

It is estimated that the annual cost of teaming materials in the down town district of Chicago, bounded by Kinzie street on the north, Twelfth street on the south, Canal street on the west and Lake Michigan on the east, is not less than \$50,000,000, or a sum greater than the gross earnings of any railroad system entering Chicago. About 70,000 freight trucking rigs are constantly in operation in the city of Chicago, fully half of which now ply through the district which will be served by the tun-

nel. sufficient bin capacity for a full day's consumption of coal. The building owners are, therefore, at the mercy of the teamsters' unions, who have carried matters with a high hand in the past. Matters came to such a pass at one time that buildings which did not have union engineers, firemen, elevator conductors and even union scrub women could not receive a pound of coal, as the teamsters' unions were made the catspaw to pull the chestnuts out of the fire for almost every other union in the city, making the teamsters for the time all powerful. It is estimated that 8,000,000 tons of coal are teamed through the streets of Chicago annually, nearly half of which tonnage goes to the down town district, and that nearly 3000 coal teams are used. Large office buildings like the Rookery, the Masonic Temple, the Fisher Building, the Monadnock, the Old Colony, Chamber of Commerce, Stock Exchange and New York Life, using an average of from 70 to 100 tons of coal a day, are dependent upon wagons both for the delivery of their coal and for carrying away their ashes. It is said that the Auditorium Hotel buildings use an average of 205 tons of coal a day, and that they have bin capacity for only about half that amount. The Chicago Edison Company uses 425 tons of coal a day, and there are more than 1000 manufacturing establishments within the area of the

tunnel proposition that use steam coal in larger or smaller quantities. All this coal can be delivered by the tunnel route, and the resulting ashes carried away by the same method.

Motive Power.

About 3 miles of trackage are already laid, and in this installation power is received from a third rail midway between the tracks, the power rail consisting of a perforated bar of steel about 4 inches wide and $\frac{1}{2}$ inch thick, spliced with fish plates and clamped between wood stringers, as shown in Fig. 6. This power "rack rail" is covered with a slotted plank cover for the protection of pedestrians and animals working in the tunnel. It has the double purpose of conveying the electric current and serving as a rack in which the sprockets of the locomotives mesh. Two Morgan electric locomotives are now used experimentally and for construction purposes. This type of locomotive has a sprocket wheel at each track axle, the cogs of which reach down through the slot in

acting as a return. While no definite announcement has been made as to the form of motive power that will be installed permanently, it seems to be pretty generally understood that for the present overhead trolleys will be used as a general thing, and the Morgan locomotive, with its rack rail and pin-on wheel, will be used only on the inclines where freight is transferred from the low level of the tunnel to the street level.

The tract of land at Taylor street and the Chicago River above referred to has a frontage of 404 feet on the river and runs westward 700 feet from the docks. It will contain the power plant above referred to, duplicated so that it will not be possible to throw the service out of commission because of a break down of engines. But the major portion of the land will be occupied by immense warehouses in which merchants can store their goods which they receive from railroads until such time as they require them. It will not only be a storage warehouse, but a central transfer station for freight. It is served by the Chicago Terminal Transfer Railway, with which road the tunnel company will have a working agreement as to the delivery of freight. The best modern appliances for handling and transferring of freight will be installed. The tract of land cost the company \$2,000,000 or more, and the company proposes the expenditure of at least \$5,000,000 in the erection of warehouses and power plant.

At another point, also doubtless along the Chicago River, the tunnel company will purchase a site for coal transfer yards and warehouses, which will enable the company to deliver coal brought into Chicago by any shipper to any of the down town buildings or manufacturing plants connected with its tunnel system.

The company purchased some time ago 22,000 tons of 56-pound rails, which will lay 22 miles of 24-inch gauge underground railway, 20 miles of which are main line and 2 miles sidings. The rails are set on chairs and imbedded in cement, no ties being used. In laying the rails the cement is brought up not only over the chairs, but almost to the level of the rail. The rail is secured to the chair by means of two hook bolts, somewhat wedge shaped, one on either side of the rail. The wedge shape of the hook tends to tighten the bolt in its socket when the nut is turned up.

Steel Cars.

One form of steel cars now being used in the tunnel experimentally was built by the Bettendorf Axle Company, Davenport, Iowa. The large contract, however, for cars for the whole system has not been placed, and is being figured on by many interests. The Bettendorf car has a body made of pressed steel, completely inclosed, with hinged sides. This car has 30,000 pounds capacity, and is made so that it is quickly convertible into a flat car by removing the hinged sides, and can be opened either at the top or sides. A number of these cars have been ordered from the Bettendorf Company for the purpose, primarily, of carrying the mails, as the tunnel company is about to close the contract for carrying United States mails from railroad termini to the central post office, and from the post office to nearby substations, and it is necessary that a car which can be locked and sealed be used for the transfer of valuable shipments of this character. The car is made so that it can be dumped either by means of a crane or by an air piston which moves in a cylinder to be set alongside the track. Master Car Builders' couplings are used, instead of the ordinary mine car hitchings.

Method of Handling Trains.

It is a common saying among railroad men that there is practically no limit to the amount of freight that a single track railroad can handle, provided there are sufficient switching tracks. The loading and unloading and switching of freight consume time, rather than the through transit of it. The method of running trains that will be adopted by the tunnel company practically eliminates all loading, unloading and switching delays, as its line is always a "through" line, made without stops, all cars on a given track running in a given direction on the loop system. Several thousand cars will be in use, and these cars will be supplied empty to shippers of freight, who will load them either on their own underground sidings or on their shipping floors, connected with the tunnel by elevators in vertical shafts, and when full will transfer them to the main track, where they are



Fig. 5.—Loading Excavated Material in Wagons at the Head House of Shaft.

CHICAGO'S UNDERGROUND FREIGHT RAILROAD.

the protecting cover and engage the square openings in the charged rail.

The conditions surrounding the mechanical construction of the cars and locomotives for use in this tunnel are different from those ordinarily found in mines, and the specifications, for that reason, were difficult, calling for special construction to meet special conditions. One of the points to be provided for is the fact that both cars and locomotives must be of such a character as to permit them to swing around curves at the street intersections at a radius as low as 15 feet, and this is made more difficult because the walls are necessarily vertical and the clearance is not sufficient to permit the tilting of the tracks at the curves. The frictional resistance necessary to draw a train of cars around such curves on the dead level is very great, and for this reason it is held that the cogged center rail with sprocket locomotive is necessary to best results, as a locomotive to secure necessary traction for such conditions would have to be extremely heavy, something that is not possible in the small bore of the shafts. The narrowness of the gauge made it necessary for the builders of the Morgan locomotive to make a special locomotive for this purpose, in which the wheels are inside, instead of outside, the frame work.

At the present time power is being purchased from the Chicago Edison Company, although it is the intention of the Illinois Tunnel Company to erect a power station of its own, land for which has already been purchased at Taylor street and the Chicago River, installing machinery that will develop at least 10,000 kw. A direct current of 250 volts is used to operate the locomotives, the rails

taken in charge by the locomotive and hauled immediately to their destination. Even the longest haul will be so short that it will be less expensive for the company to do this than to endeavor to wait until trains of any size are made up. In effect, the Illinois Tunnel Company has nine single track roads running north and south at distances of a city square apart, with ample provision for side tracks underground, and 10 similar tracks running east and west. At each street intersection Y's, or cut offs, with 15 to 20 per cent, radius, are provided, so that cars can be shipped from any point with the least possible loss of time. Switches are at each intersection, and these switches will be controlled by the motorman, who will push a lever that strikes another lever on the side of the tunnel, the fixed lever controlling a pneumatic device that will throw the switch in front of the train. A corresponding lever at the other side of the section will close the switch after the train has passed over it.

At each street intersection is a telephone connecting with the train dispatcher's office, and electrical devices

and the freight yards at the south, the only direction in which this district can grow is upward or downward. The skyward growth is reaching its limit in the tall skyscrapers, but the era is not far distant which will make available underground stories, and a number of new large office buildings now going up are being excavated clear to the 46-foot level of the bottom of the tunnel. This deep sub-basement will be used as a switching yard for the cars which come with coal and leave with ashes, and for storage tracks on which loaded cars will be held.

By means of this system it will be possible for building owners to feed coal direct from the tunnel company's cars into their furnaces and to dump ashes in the same way, saving much of the present handling cost. Even in the excavation of buildings, the material excavated, instead of being hauled off in wagons, will be shot down a shaft to the tunnel and carried off to the lake front over the new incline previously referred to. By this method, instead of devoting valuable ground floor space to shipping rooms and blocking streets and sidewalks while loading and unloading, shippers of freight will be enabled to place



Fig. 6.—View of Electric Locomotives and the Central Rack Rail From Which They Receive Power.—Right Hand Locomotive Approaching a Main Line on Cut Off with Loaded Train.

CHICAGO'S UNDERGROUND FREIGHT RAILROAD.

will indicate to the dispatcher the location of every train or locomotive. By the use of electrical signals the dispatcher can stop any train at any intersection and telephone the motorman any change in routing and running instructions.

The Automatic Telephone System.

The Illinois Tunnel Company's telephone department is scarcely less important than the freight service department. Provision is made for a system embracing 100,000 telephones under the Strowger patents and licenses. This telephone service is wholly automatic, the subscriber connecting himself through automatic machines at "central" with the desired number. This is done by revolving a numbered dial plate on the front of the telephone to the numbers desired. The telephones are supplied free in the business district, the subscriber paying 5 cents per call, with a maximum charge of \$85 a year. This service is already installed for about 10,000 telephones, and is growing in popularity because of its freedom from annoying delays, its cheapness and the fact that eavesdropping at any point on the line is impossible.

The City to Grow Downward.

The down town district is becoming more congested every year. With the increase in the value of property, land owners are finding it necessary to tear down 8 and 10 story buildings and put up in their places 18 and 20 story buildings, and as the buildings increase in height the congestion becomes more acute. Every square foot of land is already built up in this district, and, as its bounds are sharply set by the river and the lake on three sides

their shipping and receiving departments in basements or sub-basements, from which tunnel carloads or trainloads of freight may be handled with the utmost expedition. The promoters of the company promise that a regular freight schedule will be in operation not later than November 15 of this year, and that a short line will be in operation commercially in a very few weeks.

The cost of ventilation in buildings was recently discussed in Great Britain. It appears that the Glasgow art galleries, supplied with 9,000,000 cubic feet of air per hour, require 66 horse-power, at an expense of \$1450 per 1,000,000 cubic feet per year. The Manchester Technical School, supplied with 12,000,000 cubic feet per hour, requires 80 horse-power, and the cost is \$1308 per 1,000,000 cubic feet per year. The Birmingham General Hospital uses 13,000,000 cubic feet per hour, and requires but 19 horse-power, the cost being only \$287 per 1,000,000 cubic feet per year. The Royal Victoria Hospital, at Belfast, uses 5,000,000 cubic feet per hour, at an expense of only \$97 per 1,000,000 cubic feet per year, with $5\frac{1}{4}$ horse-power. In this connection it is interesting to note that a recent \$300,000 building in Chicago has a heating and ventilating plant which cost \$75,000.

The Shepherd Engineering Company, Franklin, Pa., builders of high speed automatic and four-valve engines, has opened an office in the Farmers' Bank Building, Pittsburgh, to better take care of its rapidly growing business in the Pittsburgh district.

Mexican Railway and Industrial Notes.

The Rainy Season.

DURANGO, July 27, 1904.—There have been generous rains throughout the Northern States. The lands which, on account of the dryness of these States and the utter lack of any adequate means of irrigation, lie parched and fallow nearly half the year are now being plowed and planted. This appears to be a striking instance of waste of time and opportunity, when it is remembered that all the natural factors, with the single exception of moisture, which combine to produce abundant crops, and a succession of them, are present. In many of the States north of the Rio Grande, bordering upon the Gulf of Mexico, and, indeed, in States further north, a crop of corn has already been harvested when the Mexican farmer of the Northern and Central States begins to think of plowing. He must perforce stand idly gazing over his brown and dry fields, waiting for the rains, in the absence of which all labor would be fruitless. There are indications, however, that the subject of irrigation is assuming a more important place in the minds of the hacendados as well as in the deliberations of the State legislatures. Several extensive projects for the artificial flooding of large areas of agricultural lands are now in the course of execution.

The Monterey Steel Plant Busy.

All the departments of the new steel works at Monterey are in active operation. A local paper gives details which are in part as follows:

At the present time about 1000 men, a full force, are at work, some of the departments being operated both day and night. In addition to the men at work at the steel plant the company has about as many more employed in its offices and various mines.

The blast furnace is running steadily, the output at the present time being between 200 and 300 tons daily. A great deal of this product is used in the fluid state, instead of being molded into pigs.

The principal products of the steel plant are rails, mining rails, bar iron and mild steel, also rivets, bolts, nuts and spikes. At the present time it is shipping rails to the National and Hidalgo and Northeastern railroads.

Drill steel is a product to which the steel plant people are just now devoting a great deal of attention. It is stated, on the best of authority, that the drill steel, from the big steel mill here, has been thoroughly tested in the mines in different places of late and has been found not to be excelled by any that has been introduced in this country, and it is selling at just half the prices that are asked for the same grade of imported material.

There is great activity in the structural department, where work continues unabated day and night. Sufficient orders are now on the books of the company to keep this department busily engaged for the next month and a half. Bridge work, including heavy and small beams, is turned out, as well as other structural material.

In fact, the steel plant is in a most prosperous condition, things are moving along smoothly and the products are being turned out in rapid succession.

Industrial Notes.

C. R. Ferguson, a representative of the Computing Scale Company, Dayton, Ohio, has recently been in the capital with the object of securing a modification of the existing laws relating to balances, in the hope of being able to introduce his company's specialties into Mexico.

There is much activity in the mining districts. Several large orders for machinery have been placed in the United States recently. One of these was for a complete volatilization equipment for the Amparo Mining Company, Etzatlan, Jalisco, the shipment being 40 carloads, a portion of which has arrived.

According to a Mexico City report, Ralph H. Beach has severed his connection with the General Electrical Company, to devote his attention to the Tula Iron Works, Tula, Jalisco, in which he is interested. As already reported, the company intends to modernize and enlarge the plant and to build a railway from the iron ore mines to the works.

Dunsmuir & Sons, a coal and coke exporting firm of Vancouver, B. C., have had representatives in the capital seeking to obtain from the Government a subsidy for a steamship line between British Columbia and Mexican Pacific ports, the expressed object of the firm being "to create a market for coal and coke and carry back Mexican ores."

Land owners in the neighborhood of the Villa de Sacramento, in the State of Tlaxcala, are contemplating the carrying out of an extensive irrigation scheme, and if the project is decided upon they will, in all probability, require material and apparatus.

The State of Coahuila, Mexico's only present available source of coal supply, is rapidly increasing its production. It is estimated that the yearly output of coal and coke from the different mines in the State is now 1,000,000 and 100,000 tons, respectively. Of this total, the Mexican Coal & Coke Company, Las Esperanzas, produces the largest quota. This company is very active in developing its property, the latest evidence of its progressive movements being the extension of the railway line from Las Esperanzas to Nogalitas, 24 miles distant.

A large order for copper wire has been placed by the Mexican Light & Power Company with the Ansonia Brass & Copper Company, Ansonia, Conn., through the company's New York purchasing agent. The Mexican Light & Power Company has in hand the large power plant at Necaxa, Puebla. The order alluded to is one for nearly 2000 tons of wire, to be used for transmission purposes, the distance from the initial point to the point of distribution being 125 miles.

The Government has notified the various custom houses that hereafter there will be no duty on zinc concentrates containing less than 250 grams of silver, or 10 grams of gold per ton.

Among the plantations which will require sugar mill machinery is the Tampico Sugar Company, situated near the city of that name, who proposes to install a plant.

The National Tehuantepec Railway Company has ordered 20 freight cars from the American Cliffs & Foundry Company.

De la Lama & Zwicker is the style of a new firm recently formed in the City of Mexico to engage in the business of building contractors.

The firm of Garrett & Hawke, structural steel contractors and agents in the capital, has been dissolved by mutual consent, Mr. Hawke continuing. J. J. D.

At the coming meeting of the Lake Superior Mining Institute, which will be held at Ironwood, Mich., and at Milwaukee, on August 16 to 18, the following papers will be presented: "Titanium and Titaniferous Iron Ores," by Dr. Nelson P. Hulst, vice-president of the Oliver Iron Mining Company (United States Steel Corporation); "Supply System," by Walter M. Jeffry, general auditor of the Oliver Iron Mining Company; "The Bisbee District of Arizona," by George A. Newett of Ishpeming Iron Ore; "Sinking Sand Shaft at Maas Mine," Negaunee, Mich., by W. W. Graff of the Cleveland Cliffs Iron Company, Ishpeming, Mich.; "Iron and Steel Consumption," by George H. Abeel, president of the Institute; "A Study of Faulting at the Ashland Mine," by Lucien Eaton of the Ashland Mining Company, Ironwood, Mich.; "Sinking a Shaft in Quicksand at the Susquehanna Mine," Hibbing, Minn., by H. B. Sturtevant of the Buffalo & Susquehanna Iron Company, Duluth, Minn. Messrs. Graham, Pope, F. W. Sperr, J. Parke Channing, R. S. Rose and others have also promised to prepare papers for discussion. After the meeting at Ironwood on the 16th the party will leave by special trains over the Chicago, Milwaukee & St. Paul and the Chicago & Northwestern roads for Milwaukee.

The Board of Directors of the Empire Steel & Iron Company, Catasauqua, Pa., at their meeting on July 25 decided to combine the offices of secretary and treasurer. The present treasurer, J. S. Stillman, was elected to fill the dual position. He was also elected secretary of the Crane Iron Works.

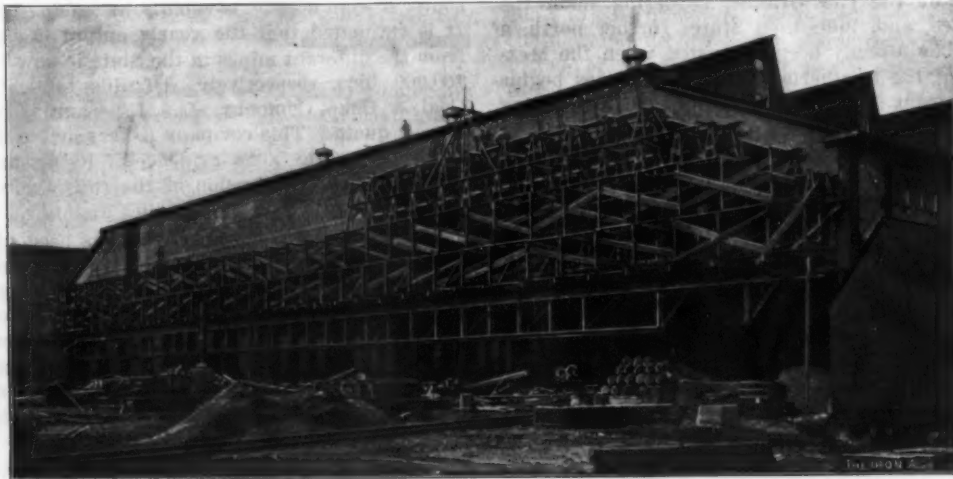
The American Bridge Company's Ambridge Works.

The Largest Bridge Plant in the World.

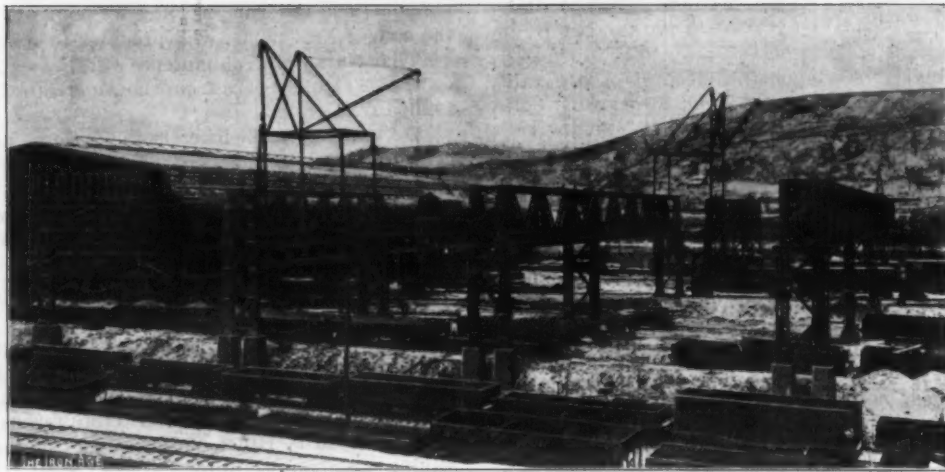
In March, 1900, the Berlin Iron Bridge Company, East Berlin, Conn., of which C. M. Jarvis was president, decided to build a plant in the Pittsburgh district for turning out the heavier kinds of structural work, and in order to be near the source of supply of raw material. After looking at various sites, the company concluded to locate at Economy, Pa., on the line of the Pittsburgh, Fort Wayne & Chicago Railway, about 17 miles from Pitts-

burgh, Pa., and the Canton and Youngstown plants, in Ohio, have all been removed to Ambridge. Other plants will also be taken there in the future. In addition to the 38 acres originally owned by the Berlin Iron Bridge Company, the American Bridge Company acquired 105 more acres in the lower end of the tract, to be used for manufacturing purposes, and 25 acres above the railroad track, to be used for an office building, which has been completed, and for park purposes. It is also probable that in the near future a railway station will be built adjoining the office building.

The first work turned out in the plant by the American Bridge Company was eye bars, the company having a very large contract for eye bars, without sufficient facili-



The Receiving End of the Main Bridge Shop.



The Loading Yard.

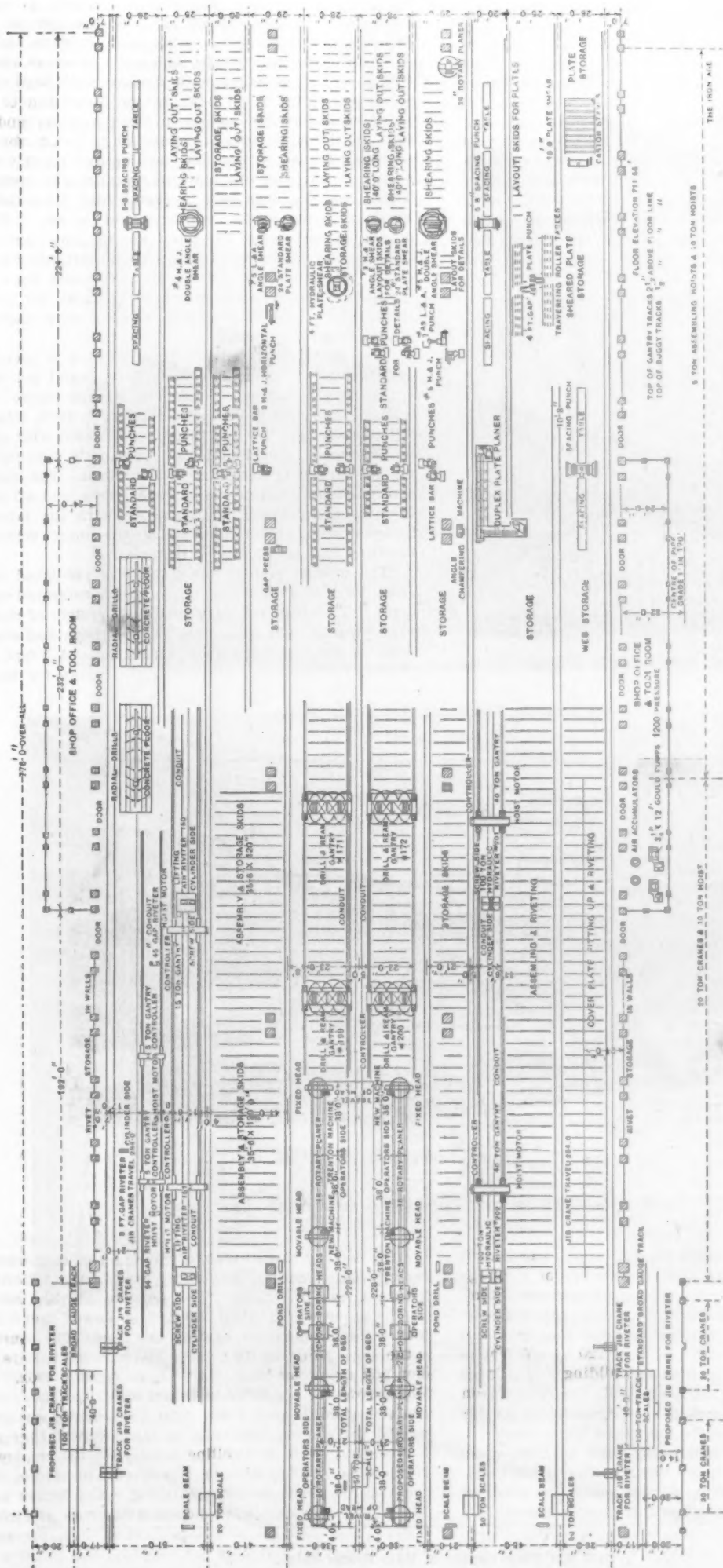
THE AMERICAN BRIDGE COMPANY'S AMBRIDGE PLANT.

burgh. A tract of land containing 38 acres was bought from the Economy Society and the erection of a bridge plant was begun. The first building erected was a templet shop, in which it was intended to fabricate material for the other buildings. A large machine shop was also placed under erection, which was to be 220 by 700 feet in size. Foundations were in for this building and a large engine was installed, but in May, 1900, the Berlin Iron Bridge Company was absorbed by the American Bridge Company, and all work on the new plant was stopped.

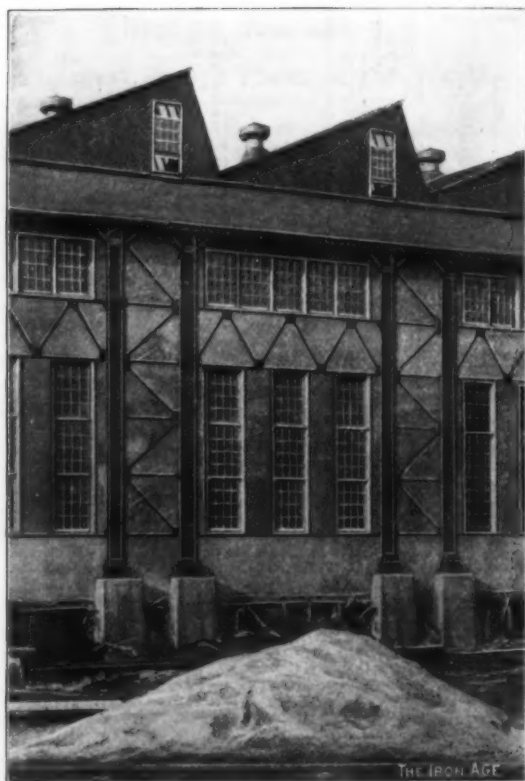
Nothing further was done until early in 1902, when the American Bridge Company took up actively the building of immense bridge shops at this place, the name of which was changed to Ambridge, intending to concentrate the bridge works in Pittsburgh and several other places in one large plant. These plans have been closely followed, and the Pittsburgh Bridge Company Works, the Walker Works, at Homestead, Pa., part of the Keystone

ties for making them. Half of the eye bar shop was fitted up with structural machinery for turning out shapes for their own buildings. The erection of the eye bar shop was begun in April, 1902, and power and boiler houses were undertaken at the same time. The runways in the stock yards, loading yards and between the eye bar shop and the boiler house were begun in July, 1902. The foundations for the forge, bolt, nut and rivet shops were commenced in August, 1902. The main bridge shop was started in October, 1902, and in December of that year the company built 20 dwelling houses for the employees. The templet storage building was started in March, 1903, and also the handsome office building, which is now occupied. The machine and pattern shop was started in March, 1903, and the auxiliary bridge shop, for small work, in May of that year.

The completed portions of the works consist of main bridge shop, eye bar shop, stock yard runways, shipping



PLAN OF MAIN BRIDGE SHOP OF THE AMERICAN BRIDGE COMPANY.

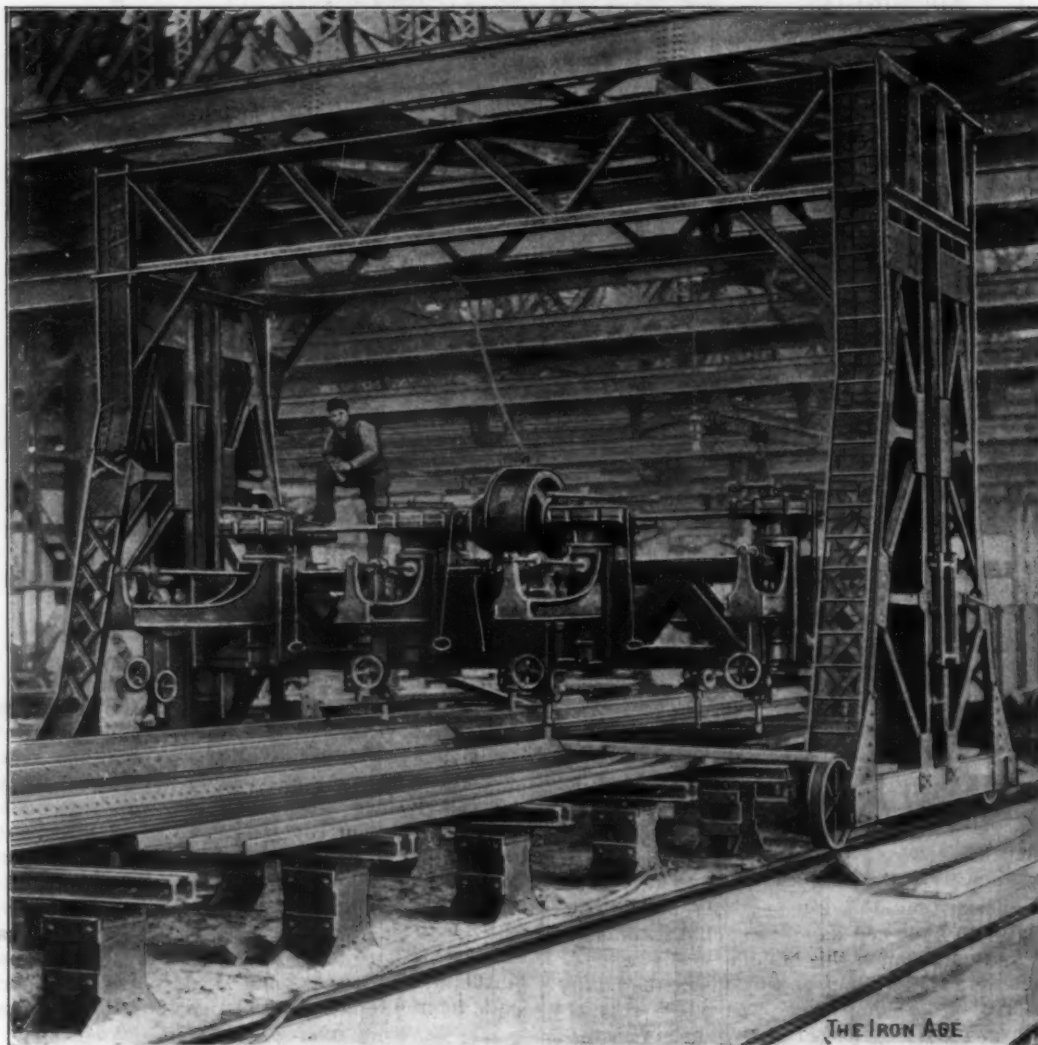


Side of Main Bridge Shop, Showing the Roof Design and the Concrete Curtain Wall.

yard runways, templet storage building, templet shop, bending and forge shop, office, power house, machine shop and two storehouses. The boiler house is also completed and is equipped with modern coal handling appliances. Seventy-five per cent. of the ultimate boiler capacity is installed, while in the power house 60 per cent. of the equipment is completed. The runways for traveling cranes serving the bending and forge and bolt shops, eye bar shop and machine shop are also completed. There has also been built a foot bridge from the office building to the works, which is now in use. The uncompleted portions of the plant are the auxiliary bridge shop for the lighter kinds of work, the bolt, nut and rivet shops, tempering and pattern shop, cleaning department for foundry, pattern storage house and also the iron and steel foundry buildings, with cupolas and open hearth furnaces for serving them.

Enough of the plant has been finished to permit the turning out of about 7000 tons of material per month, but with the ultimate completion of the entire works, which is expected to be about January 1, 1905, this plant will have a capacity for turning out 20,000 tons of miscellaneous structural material per month, making it by far the largest bridge plant in the world. The buildings are substantial and permanent structures, and all the appliances are devised in accordance with the latest experience and are arranged for the most economical handling and production of material.

The ground plan of the plant was published in *The Iron Age* for June 26, 1902, to which reference can be made. The shops are paralleled by a system of standard gauge tracks, which involves all the shops and connects with the Pennsylvania lines of railroad. A 3-foot gauge electric belt line also surrounds the works for the con-

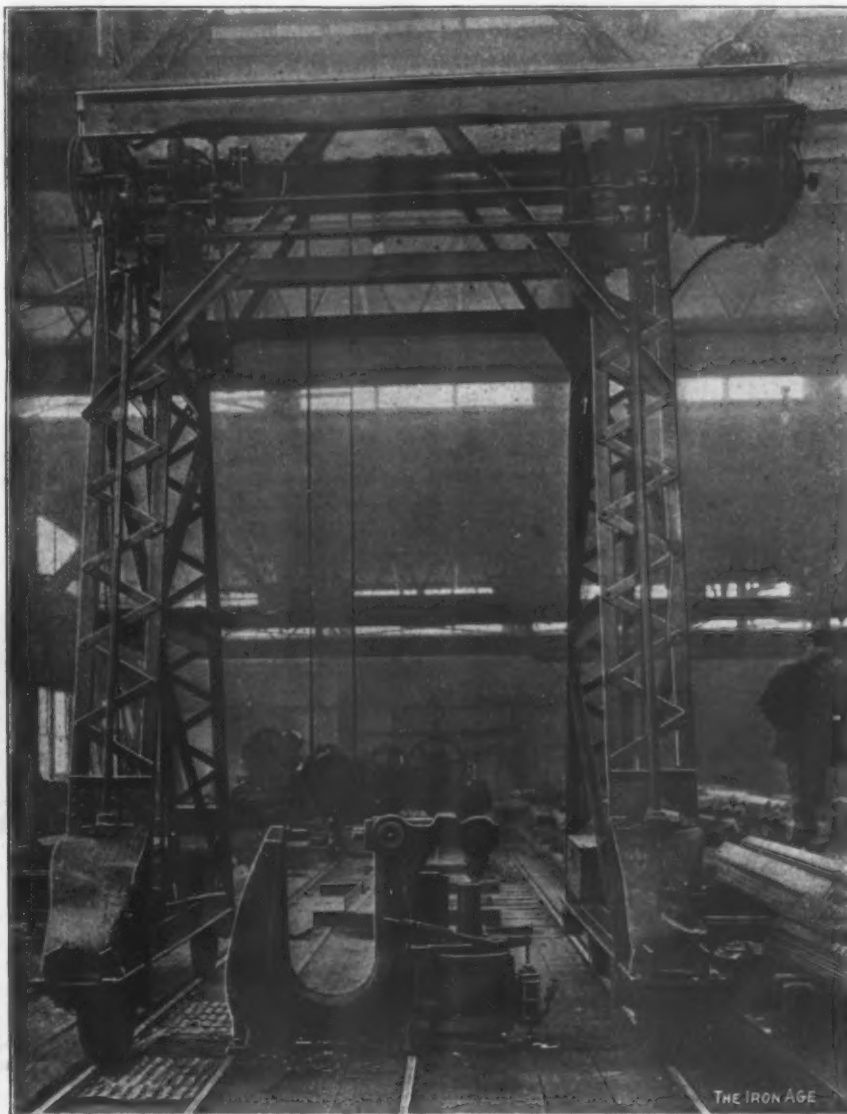


Drill and Ream Gantry in Main Bridge Shop.

venient transfer of men and of material in small bulk. At a convenient point is situated the receiving stock yard of the plant, where all the mill material is received and distributed for passage through the shops. This stock yard is covered by a system of traveling cranes extending from the railroad toward the river and at right angles to the direction in which the material moves. Similar cranes of greater capacity for handling and loading the finished product are located at the opposite end of the bridge shops, and at various other points are located parallel similar systems of traveling cranes for the convenience of contiguous shops. These cranes have all the uniform span of 60 feet and are interchangeable

structural members of over 100 tons in weight or over 120 feet in length. Many of the tools in the shop are of special design, such as multiple punches for simultaneously punching standard beam connections and punches with automatic tables or adjustable spacing racks. Multiple radial drills carried on longitudinal moving gantries serve for the usual drilling and reaming. Riveters of special design are carried on gantries or traveling wall cranes. The revolving machinery is electrically driven, no vertical belts being required, thus clearing the whole overhead area for the free use of the electric hoists.

This building is flanked with lateral wings, which serve



The 5-Ton Riveter Gantry in the Main Bridge Shop.

THE AMERICAN BRIDGE COMPANY'S AMBRIDGE PLANT.

on the respective runways. Toward the railroad end they connect with the gantry, which runs parallel with the railroad, by means of which cranes can be transferred from one point to another as convenience requires, or a special heavy crane can be placed on another runway to facilitate the handling of exceedingly heavy pieces. A description of the buildings of this plant starts naturally with the

Main Bridge Shop.

This is a massive building 270 feet wide by 780 feet long, equipped with tools and handling appliances of modern design. A ground plan of this building is shown herewith, together with illustrations of portions of the building and features of its equipment. The whole area of the shop is covered by a system of electric hoists operating transversely. At the lower or discharging end of the shop facilities are provided for handling and machining

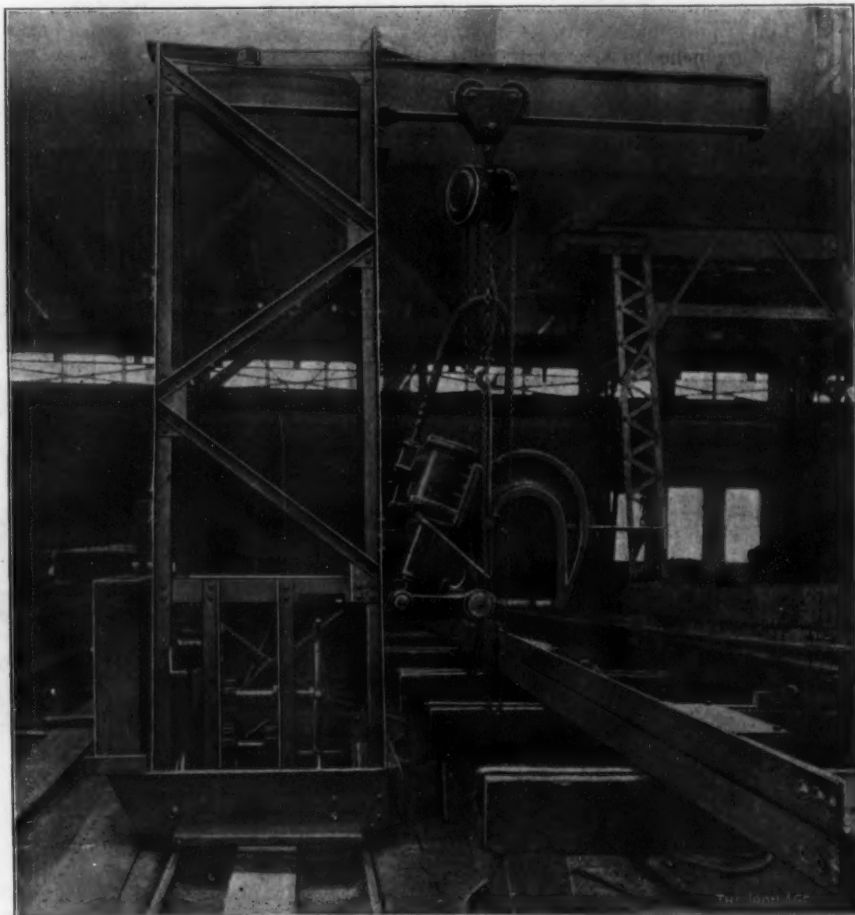
as tool rooms, shop offices for the foremen, &c. The building is amply lighted by high sash around the walls in conjunction with the special area of skylights in the roof. The general construction of this building, as, indeed, of all the shops of the plant, is a skeleton structure of steel, thoroughly braced, and all wall surfaces not of glass are filled with cement concrete. The only combustible material used is wooden plank sheathing for the roof. Longitudinal tracks at suitable intervals extend from the stock yard through the shop to the loading cranes, on which material is carried from power operated cars. Arrangements have been perfected for heating the building in the winter season, and other provisions have been made for the comfort and convenience of the workmen.

The Machine Shop.

The machine shop is also a very large iron and steel building, having a total length of 252 feet, with a center

bay 60 feet wide, flanked on both sides by bays 28 feet wide, giving a total width of 116 feet. The center bay is separated from the side bays by columns spaced 26 feet, supporting a traveling crane runway. The side bay columns are spaced 12 feet, the centers supporting one end of the leanto roof over the side bays, the other end of the truss being supported by a longitudinal girder carried by crane columns. The center bay has a clear height of about 37 feet from the floor to the lower chord of roof truss. The two side bays have a clear height of about 14 feet from the floor to the lower chord of roof truss. In the north end of this building is a foreman's office, 20 feet wide by 15 feet long, which has two floors. The shop is commanded by two 25-ton traveling cranes which run the entire length of the shop, also four 10-ton traveling cranes. The south end of this building has

14 feet. The basement of this building will have a concrete floor, and will be designed as a wash room for both machine shop and foundry employees, and will contain an equipment of lockers, wash basins and lavatories ample for the needs of 500 men. Chutes for the collection of shavings and refuse from the main floor will terminate below the ceiling of the basement, and will be provided with gates, opening within and without the walls, by means of which the contents will be discharged into box trucks for removal. The entire length of the building will be covered by a 2000-pound beam hoist, supported from the chord of roof trusses at center. The roof will have skylights about 8 x 8 feet in alternate panels on each slope, and will be equipped with Star ventilators, which will afford thorough ventilation, and which will be connected with ventilating ducts in the



Track Jib Crane in Main Bridge Shop.

THE AMERICAN BRIDGE COMPANY'S AMBRIDGE PLANT.

been so constructed as to permit ready removal in the event of extension being made.

The machine shop is equipped with a large number of heavy modern iron working tools, while considerable equipment is yet to be added. Among the larger tools are a 72-inch Pond planer, a 60-inch Sellers planer with 16-foot bed, a 48-inch Bement & Dougherty planer with 12-foot bed, a 50-inch New Haven planer with 17-foot bed and a 36-inch Pond planer. There are also numerous shapers, slotters, boring mills, radial drills, milling machines and 44-inch and 72-inch Colburn boring mills, together with many other smaller iron working tools. A considerable part of the equipment has been removed from other works of the American Bridge Company, but a good many of the tools are new.

The Pattern Shop.

Plans have been drawn for the building of a pattern shop 128 feet long by 60 feet in width, the height from level of the basement floor to first floor beams to be 7 feet 6 inches in the clear at the center. From the first floor level to the lower chord of the roof truss will be about

side walls, these ducts to lead from the basement floor. The greatest possible lighting service will be obtained, particularly in the basement, and a minimum amount of combustible material will be used in all the windows. The south end of this building will be bolted in place, to permit of ready removal in the event of extension being made.

The Templet Shop.

The templet shop is 512 feet in length by 60 feet in width. It has a basement with a concrete floor, which serves as a washroom for both the main and auxiliary bridge shops, containing an equipment of lockers, wash basins and other toilet accessories. Like the pattern shop, this building is equipped with chutes for the collection of shavings and refuse from the main and gallery floors, which terminate below the ceiling of the basement and are provided with gates by means of which the contents are discharged into box trucks for removal. The height from the first floor to the level of the gallery floor is 13 feet, and from the gallery floor to the lower chord of the roof truss is 9 feet. The south end of the building

is provided with two doors, each 4 feet wide, and running the total height of the building, about 23 feet, to permit the passage of the beam trolleys. There are galleries for both sides running the entire length of the building, except for about 98 feet from the south end. The space between the galleries for the entire length of the building is covered by two 500-pound beam hoists, supported from the chord of roof trusses. The south end of the building has a clear height of about 23 feet from the main floor to the roof chord and is used for assembling templates and for the temporary storage of finished templates not immediately required in the bridge shop. The roof has skylights about 8 x 8 feet and is equipped with Star ventilators.

Iron and Steel Foundry.

Work has been started on an iron and steel foundry building, 360 feet long by 116 feet in width, provision having been made for extending this building at either end, if necessary. The iron foundry will be equipped with two cupolas, 80 and 58 inches in size, while the steel foundry will be equipped with two 15-ton open hearth furnaces. These furnaces will be gas fired, but gas producers may be provided in case of failure in the supply of natural gas. The foundry is commanded by two 25-ton

able papers. There are lavatories in the basement and also on the second and third floors. The building is of fire proof construction, with reinforced concrete floors, and is practically fire proof. The lighting for the office building and for all the shops is furnished from the company's own electric plant, while the water used is furnished by a company well. Natural gas, which is found in abundance near the works, is used exclusively for fuel, except for the boilers, which are coal fired. Tanks have been built over the boilers, from which the coal is delivered to the stokers, the ashes being dropped in a tunnel below the ash pits, from which they are removed to a dump at the end of the boiler house.

The output of the plant consists of all kinds of structural steel work, from the heaviest to the lightest, and a new departure recently is the building of steel barges. The American Bridge Company intends to devote considerable attention to the latter product and has already built a number of steel barges from its own designs.

The Massachusetts Steel Casting Company.—This company has been incorporated under Massachusetts laws with a capital stock of \$500,000, to take over and



Pipe Bridge in the Stock Yards.

THE AMERICAN BRIDGE COMPANY'S AMBRIDGE PLANT.

and four 10-ton traveling cranes and 5-ton walking jib cranes in the center bay, also six 3-ton travelers in the side bay.

Other Buildings in the Plant.

The above are the main buildings of the plant, but there are numerous smaller buildings. Among these are the bending and forge shop, 220 x 240 feet; an eye bar shop, 220 x 225 feet; a power house, 84 x 210 feet, bolt, nut and rivet shop, 220 x 240 feet. As noted in the opening of this article, these buildings are completed, with the exception of the bolt shop, which is to be finished about the first of the year.

The Office Building.

The company has completed the erection of an office building, built of fire brick, with slate roof, comprising three stories and a basement, and built in the shape of the letter H. It has a total frontage on the railway side of 202 feet, while the depth of each of the two wings is 161 feet. The first floor is used for plant administration and the general offices of the erecting and mechanical engineering departments of the company. The second floor is used by the resident engineer, Richard Khuen, in charge, the south wing being given to the designing department, and the north wing to the detailing drafting rooms, the third floor being given over entirely for the latter purpose. The basement is used for blue printing rooms, the northeast and southeast corners containing the heating and ventilating plant. In the rear basements are vaults for the storage of drawings and valu-

operate the plant of the United States Steel Company at Everett, Mass. The capital is divided into 2500 shares each of preferred and common stock, the preferred stock to be 6 per cent. cumulative dividends, while the common stock is entitled to dividends up to 6 per cent., and any per cent. of earnings above the 6 per cent. on the common stock is to be divided equally between the preferred and common. The voting power of the stock is to be the same for preferred and common. The incorporators are Robert M. Morse, Boston; William G. Richardson, Cambridge, and John M. Graham, Boston. The officers are: President, William G. Henderson; treasurer, Robert M. Morse, and secretary, John Duff. Messrs. Henderson, Morse and Graham constitute the board of directors. The assets of the company were recently sold to the bondholders, and from the bondholders transferred to the new corporation.

The Southern Cotton Corporation has been incorporated, with a capital stock of \$20,000,000, to introduce Daniel J. Sully's new mechanism for ginning cotton and to establish a comprehensive warehouse system which will enable cotton growers to hold their cotton as long as desired. At this time no information can be obtained as to whether the company intends to erect a plant and manufacture its new apparatus. Besides Mr. Sully, Col. S. F. B. Morse, who was formerly passenger traffic manager of the Southern Pacific Railroad, is interested. Both gentlemen are located at 41 Wall street, New York.

The American 60-Inch Roll Turning Lathe.

A 60-inch roll turning lathe intended for extra heavy duty has just been built by the American Tool Works Company, Cincinnati, Ohio, and is shown by the accompanying illustrations. The construction throughout is extremely substantial, making it capable of withstanding the heaviest strains. The lathe is driven by a 25 horsepower variable speed Crocker-Wheeler motor, which is mounted on an extension subbase at the rear of the head stock, and is connected with the driving shaft in the head stock by a Renold silent chain, as shown in Fig. 2.

Speed variation is obtained electrically by manipulating the hand wheel at the right hand end of the carriage. This is used to start, stop and reverse the machine, and also to vary the speed by small increments. These fundamental changes of speed obtained electrically are supplemented with mechanical changes afforded by gears in the head stock, which are controlled by the two levers seen on the front of the hood. The head stock contains an assemblage of gears oppositely disposed on an upper and a lower shaft, which are engaged or disengaged by throwing the levers to right or left, and the proper combina-

turned. Straight work can be turned by simply disengaging the nut holding the shoe and by tightening the cross feed nut.

The concaving rest shown in Fig. 2 is interchangeable with the compound rest, and is used for grooving out pipe welding rolls. Its capacity includes rolls for pipe from 2 to 20 inches in diameter, and it is provided with a limiting gauge which is of value in setting the tool to any desired diameter. This rest is operated through worm and worm wheel, with either hand or power feed, the latter being derived through the feed rod and carriage with all the advantages of the regular feeds.

Otherwise the lathe contains all the features peculiar to the American lathe, including the heavy drop V-bed, making the actual swing 62 inches. All gears throughout are coarse pitch and wide face, cut from the solid.

Pig Iron Production First Half of 1904.

The American Iron and Steel Association has published in its *Bulletin* the statistics of the production of all kinds of pig iron in the United States in the first half

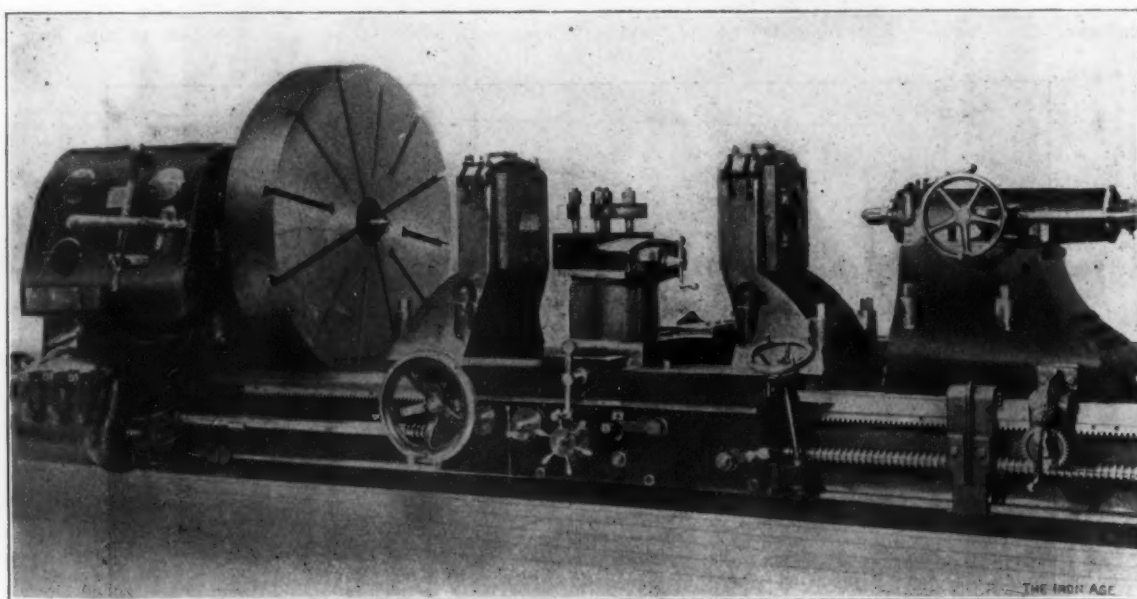


Fig. 1.—View from the Working Side of the American New Extra Heavy 60-Inch Roll Lathe.

tion of the levers for any desired speed is indicated by prominently placed index plates. Through both the head stock and motor a very wide range of speeds, varying by small graduations, is thus obtained, which is far superior to that pertaining on a machine driven by belt through a cone pulley. The levers operating the gears in the head stock are readily thrown by simply releasing a knob and all danger and liability to error are eliminated—a very important consideration in the operation of these heavy lathes. The compactness and neatness of the entire arrangement of the head stock and the motor drive are well shown in Fig. 2.

Below the all gear head stock on the head end of the bed is located the geared feed changing device. Through the three levers shown at the front of the box seven distinct and positive feeds are obtainable without changing any gears. The gears are mounted on two shafts, and are completely housed in. Simple index plates show clearly the various combinations for obtaining any desired thread pitch or feed.

Aside from the motor drive the features of special interest are the roll turning attachments. The heavy housings shown are for the purpose of holding heavy pipe roll castings. At the rear of the machine, mounted on the bed shown in Fig. 2, is a roll forming attachment, the purpose of which is to impart curved surfaces to long pipe straightening rolls. It operates on the principle of a taper attachment. A shoe provided with antifriction rollers slides in a trough following master bars, thus generating the same curve on the rolls which are being

of 1904. With the exception of five charcoal furnaces, all controlled by the same interests, complete reports have been received from every blast furnace in the country. For the five charcoal furnaces careful estimates have been made, based on former official reports and on information received from other reliable sources.

Total Production.—The production of pig iron in the first half of 1904 was 8,173,438 gross tons, against 8,301,885 tons in the last half of 1903, and 9,707,367 tons in the first half of 1903. The decrease in production in the first half of 1904 as compared with the second half of 1903 amounted to only 128,447 tons, but as compared with the first half of 1903 it amounted to 1,533,929 tons. The united production of the second half of 1903 and the first half of 1904 amounted to 16,475,323 tons, against 18,720,100 tons in the second half of 1902 and the first half of 1903, when the boom was at its height, a falling off of 2,244,777 tons. And yet the production in the first half of 1904 was greater than in any half year prior to the second half of 1901.

Classified Production.—The production of Bessemer pig iron in the first half of 1904 was 4,530,946 gross tons, against 4,503,289 tons in the last half of 1903 and 5,480,619 tons in the first half of 1903. The figures for the first half of 1904 include 87,582 tons of low-phosphorus pig iron, against 110,699 tons in the last half of 1903 and 89,723 tons in the first half of that year.

The production of basic pig iron in the first half of 1904 was 1,061,901 gross tons, against 836,923 tons in the last half of 1903 and 1,203,803 tons in the first half

of 1903. Basic pig iron made with charcoal is not included in these figures.

The production of charcoal pig iron in the first half of 1904 was 213,356 gross tons, against 272,040 tons in the last half of 1903 and 232,717 tons in the first half of 1903. In addition there were produced in Wisconsin and Washington 927 tons of mixed charcoal and coke pig iron in the first six months of 1903. No iron has been made with this fuel since the first half of 1903.

The production of spiegeleisen and ferromanganese in the first half of 1904 was 114,206 gross tons, against 81,986 tons in the last half of 1903 and 110,675 tons in the first half of 1903. The production of ferromanganese alone in the first half of 1904 amounted to 26,541 tons, against 14,118 tons in the last half of 1903 and 21,843 tons in the first half of that year. In addition to the above Tennessee made 304 tons of ferrophosphorus in the first half of 1904.

Production by Fuels.—The production of bituminous coal and coke pig iron in the first six months of 1904

31, 1902, and 286 on June 30, 1902. The number of furnaces idle on June 30, 1904, was 209. Of the active furnaces on June 30, 1904, 170 used bituminous fuel, 26 used anthracite coal and coke mixed, 2 used anthracite coal alone, and 18 used charcoal alone.

The Cramp Steel Company's Affairs.—On July 25 stockholders of the Cramp Steel Company, Limited, whose works are at Collingwood, Canada, met at Toronto to organize a new company to take over the property under foreclosure of the mortgage held by the North American Trust Company, New York. These stockholders are likewise interested in the Imperial Steel & Wire Company, Limited, having a rod mill and wire plant about completed at Collingwood, and expected to be a consumer of 100 tons daily of steel billets made by the steel company. They propose to organize the Northern Iron & Steel Company, Limited, with a capital of \$2,500,000, part of the stock to be exchanged for Cramp Steel

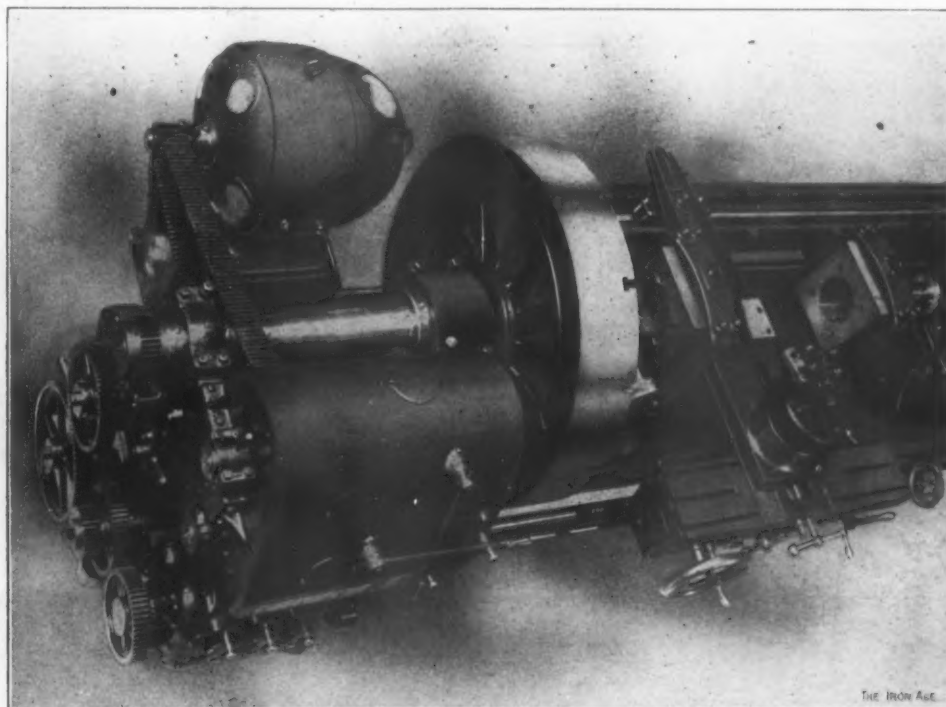


Fig 2.—View Looking Down on the Lathe at the Head Stock End.

amounted to 7,337,279 gross tons, of anthracite and coke mixed to 607,624 tons, of anthracite alone to 15,179 tons, and of charcoal to 213,356 tons. Included in the bituminous figures is a small quantity of ferro-silicon made with electricity.

Unsold Stocks.—The statistics of unsold stocks do not include pig iron sold and not removed from the furnace bank, or pig iron manufactured by rolling-mill owners for their own use, or pig iron in the hands of consumers. The stocks which were unsold in the hands of manufacturers or their agents or were under their control in warrant yards or elsewhere on June 30, 1904, amounted to 623,254 tons, against 591,438 tons on December 31, 1903, 126,301 tons on June 30, 1903, and 49,951 tons on December 31, 1902.

On June 30, 1904, the American Pig Iron Storage Warrant Company had 78,600 tons of iron stored in its various yards, virtually all of which was controlled by the makers, and all of which is included in the 623,254 tons of unsold iron reported on that date. On December 31, 1903, the company had 47,200 tons in its yards, of which 40,149 tons were controlled by the makers and 7,051 tons were in other hands. No pig iron whatever was stored in its yards on June 30, 1903, or on December 31, 1902.

Furnaces in Blast.—The whole number of furnaces in blast on June 30, 1904, was 216, against 182 on December 31, 1903, 320 on June 30, 1903, 307 on December

Company stock and some cash, for the purpose of securing working capital. A meeting of minority stockholders was held in New York July 20, at which great dissatisfaction was expressed with the company's management, and charges of misleading statements were made. A protective committee may be the outcome.

The cost of transportation by steam and by horse-power has been made the subject of an interesting comparison in Reading, England, by a firm of millers. During the year 1902 seven horses were used, the total expense on their account for the year having been \$2530.58. At the end of the year the horses were sold, and a 5-ton steam truck was bought for the work. This machine ran, during 1903, 5272 miles, carried 3870 tons of freight and burned 41.5 tons of coal, the total expense for the year, including interest on the investment and depreciation on the car, amounting to \$1849.27. This is but 73.3 per cent. of the cost of operating with horses.

The St. Louis Police Department has invested in a motor car for catching fast driving automobilists who attempt to evade the law. The machine was built by the St. Louis Car Company. It has brass railings and a drop seat directly in the rear of the driver's seat, and facing the rear seat, upon which the offender of the automobile ordinance will be obliged to ride to the station, when captured.

Steel Plant of the Grand Crossing Tack Company.

A decided departure in the process of reducing the ingot to a small billet is exemplified in the new plant of the Grand Crossing Tack Company at Grand Crossing, Ill., a suburb of Chicago. This company manufactures wire rods, wire nails and other wire products, and in order to have an independent supply of its raw material, in May, 1902, commenced the erection of a steel plant to consist of basic open hearth furnaces and a blooming mill, with necessary accessories. It is in the blooming mill that this plant departs from ordinary practice in that a 16 x 18 inch ingot is reduced to a 1¼ x 1¼ billet. 450 feet long, at one heat, between one pair of rolls.

The new steel plant is located at 118th street and the Calumet River, the station on the Pennsylvania road being named Hutchinson, after the proprietors of the plant; while the general works of the company, in which

charging boxes from the cars and depositing their contents in the furnaces. The plant consists of two 40-ton basic open hearth furnaces. Provision is made for increasing the number of furnaces when desired. From the furnaces the metal is poured into any of three 40-ton ladles, which are hoisted and carried to the pouring tracks by a large electric crane, and are tapped into a series of 16 x 18 inch ingot molds. The latter, which are set in rows on narrow gauge cars, are then transferred over several hundred feet of track to the soaking pits of the blooming mill. The open hearth plant is served by six Morgan gas producers, three producers to each furnace. The open hearth plant itself is 100 x 198 feet, two stories in height.

Blooming Mill.

But it is the blooming mill that is of the greatest interest, for it is here that new methods and machinery have been installed, which are not in use elsewhere in this country up to the present time. As will be seen by

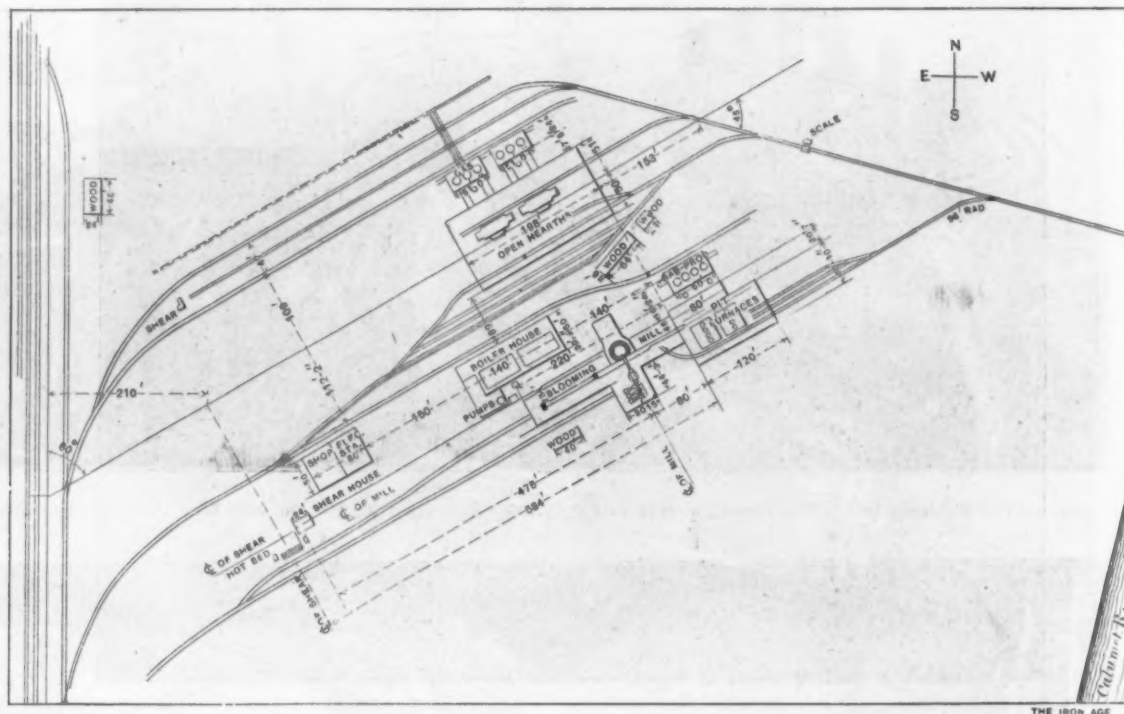


Fig. 1.—The Steel Plant of the Grand Crossing Tack Company.

wire rods are drawn into wire and fabricated into nails, staples, barbed wire, woven fence and similar lines, is at Grand Crossing, six miles north of the steel plant, direct railroad connection existing between the two plants.

New Steel Plant.

The new steel plant occupies part of a 50-acre tract of ground bought by the company, the location being on the banks of the navigable Calumet River, about midway between Calumet Lake and Lake Michigan, two miles south of South Chicago and one mile from the Indiana State line. This location gives the plant not only water connection, but the direct service of the Pennsylvania, Michigan Central, Rock Island and Chicago Junction railways, the last named being a belt line connecting with all roads entering Chicago. The general layout of the plant is shown on the accompanying diagram, Fig. 1.

Following the materials in the sequence of their fabrication, we find that the pig iron and scrap are brought into the yards on a spur track from the main lines just named. The scrap is, after being sheared, if necessary, loaded into charging boxes and shipped on cars to the open hearth furnaces. The cars run along on a narrow gauge track to the foot of the incline at the southwestern end of the furnace building, and are conveyed up to the charging floor by means of an electrically driven endless chain conveyor. From the loading cars the materials are then charged into the furnaces in the usual manner by a Wellman-Seaver-Morgan charging machine lifting the

the plan, this department is an irregular, cross shaped building, 320 feet long by 125 feet wide, maximum dimensions, the blooming mill and its engine occupying a position near the center. Ingots brought in on the cars from the open hearth department are freed from their molds by means of a Wellman-Seaver-Morgan electric stripper, and are deposited by a traveling crane in either of the two soaking pits. These pits have four holes each and have a combined capacity of 48 ingots. The gas for the soaking pits proper is supplied by three Morgan gas producers in a building just adjoining. Four such producers are shown on the accompanying diagram, but only three have been installed thus far. From the soaking pits the ingot is lifted by the electrical crane and deposited on an electrically driven chariot, which conveys it to the roll train table, on which it is dumped by an electrical tilting device.

The 36-inch blooming mill is perhaps the most striking feature of the plant, reducing, as it does, the 4700-pound ingots to 1¼-inch square billets without reheating and in one pair of rolls. The mill is of the reversing type, and the ingot is reduced in 19 passes down to a 4-inch square section, which is sheared in a 24-inch hydraulic shear. From this point the reversing ceases, the engine being operated continuously in one direction through the succeeding five passes. By means of a system of repeaters the metal is conducted around one of the blooming mill housings, as shown in the photographs, entered into the successive

passes, and finished in one piece about 450 feet long, and delivered to the run out to be sheared into 30-foot lengths. The rolling progresses rapidly, there being no

whirling over the devices which are there to guide its passage is a startling one, particularly as the passage of the billet is done at a very high rate of speed. This whole



Fig. 2.—The Blooming Mill of the Grand Crossing Tack Company. Showing Mill, Manipulator, Roll Table and Repeaters.

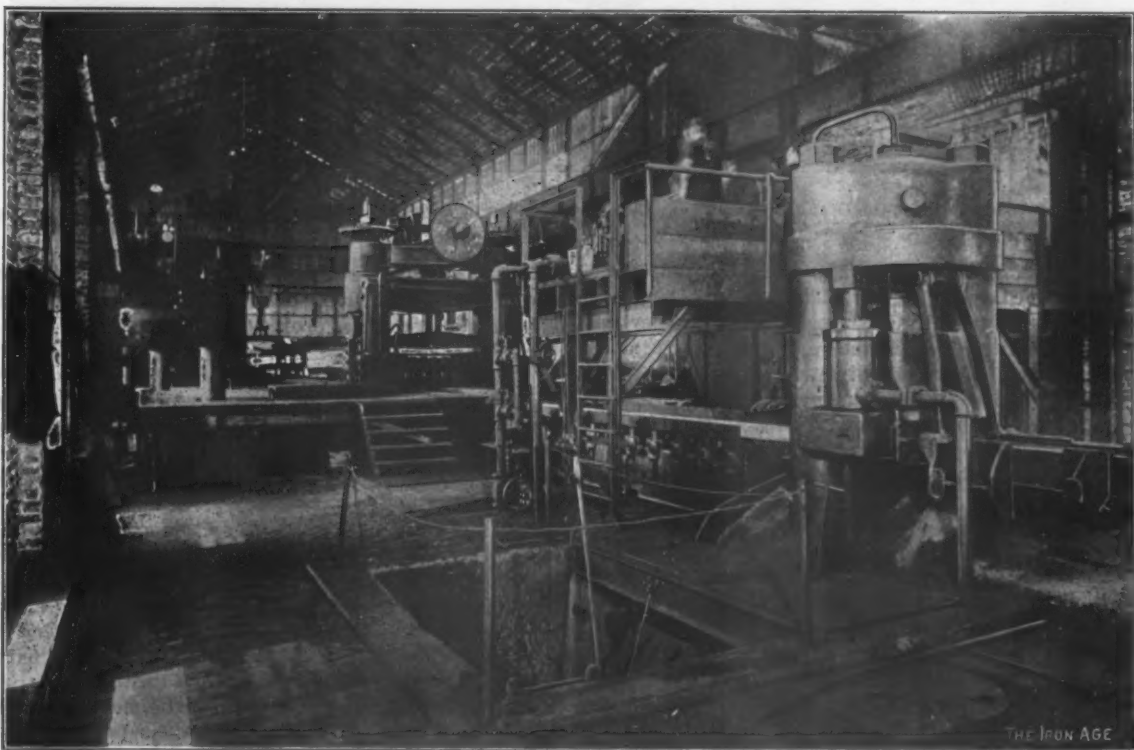


Fig. 3.—The Blooming Mill of the Grand Crossing Tack Company.—Shear in Foreground, Soaking Pit and Stripper Cranes in Background.

difficulty in rolling 12 ingots per hour, although the mill has been in operation but a few months.

The spectacle of this reptile-like bar of steel shooting out beyond the grooved table or mechanical repeater and

process of reducing a 16 x 18 inch ingot, 4 feet 9½ inches long, weighing 4700 pounds, to a 1¼-inch billet 450 feet long occupies from four to four and one-half minutes.

Continuous rolling of this character, so far as is known,

is not done in any other plant either in America or Europe, though Morgan mills in which two passes are made at one rolling are in use elsewhere. The idea of performing all these passes by a continuous run in one direction was suggested by E. W. Hutchinson, superintendent of the plant, and the Morgan Construction Company worked out the details. The process is stated to be wholly satisfactory, as the mill has run continuously nearly a year with a surprisingly small number of stoppages and scarcely any repairs.

The Morgan Construction Company of Worcester, Mass., installed the ingot and shear tables, the mechanical repeaters and all auxiliary machinery necessary to reduce the 4-inch billet to its ultimate $1\frac{1}{4}$ size, while the Wellman-Seaver-Morgan Company of Cleveland erected the soaking pits and the blooming mill proper.

The German Engine.

The success of the process is due in no small measure to the three-cylinder blooming mill engine built by Ehr-

The Grand Crossing engine was designed for a maximum speed of 200 revolutions per minute, and at a pressure of 9 atmospheres and an average speed of 120 to 130 revolutions per minute the engine yields 3500 to 4000 indicated horse-power.

The reversing engine is placed at the side, as shown in the plan. It consists of a steam cylinder with hydraulic brake cylinder. It raises and lowers the links in such a manner that the engine may be reversed, work at various cut offs, and may be stopped. The slide valve boxes lie sideways above the cylinders. Above each is a cut off valve, so that the space between the latter valve and the slide valve box is as small as possible. The engine is provided with forced lubrication. The handling of the cut off valves is done simultaneously by one lever. Since the resistance during rolling changes violently at any moment, and the engine has small rotating weights, it is impossible to regulate the speed exclusively by means of cut off. It is best to cut off early 40 to 50 per cent.

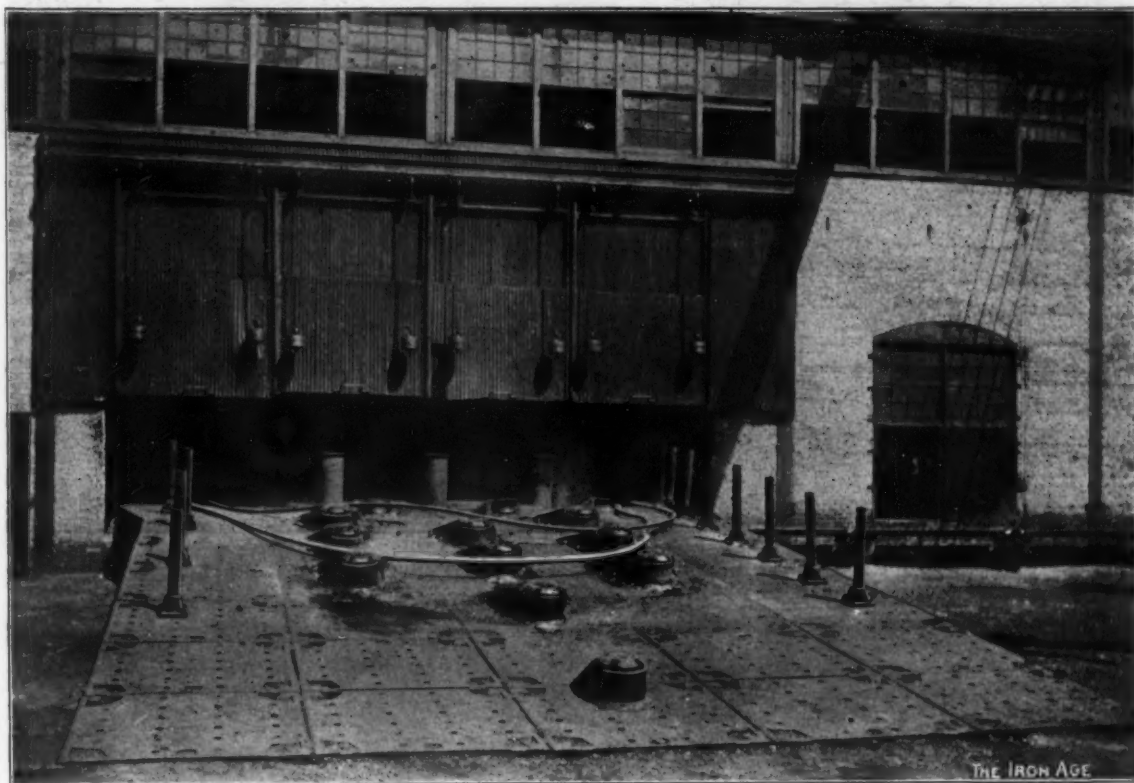


Fig. 4.—The Blooming Mill of the Grand Crossing Tack Company.—Loops of Billet, with Runway of Finished Billet to the Right.

hardt & Sehmer of Schleifmuehle, Saarbruecken, Germany. This is the first engine of this type to be used for this purpose in the United States. It has three cylinders, 1000 m., or nearly 40 inches, in diameter, and 1000 mm. stroke. The concentration of effort on the three cranks of this machine imparts a turning movement approximately uniform and permits of reversing at high speed. These cranks have a 120-degree throw, instead of 90 degrees, thus practically eliminating the dead center.

The builders do not believe in the fly wheel engine for rolling in one heat, because the fly wheel engine has a nearly constant speed, which cannot be carried beyond certain limits without making the sizing of the ingot difficult or impossible. Engines of this type, too, particularly when handled by a governor, run at greater speed, usually, at the very time when the bloom is still short and begin to drag as the piece becomes longer. But in order to roll large quantities the engine must run slowly while the bloom is short and must run faster as the length of the piece increases. In order to attain great speed of rolling the engine must start slowly, so that the ingot is seized safely and rapidly. Then the speed may be run up to 18 to 20 feet per second. At the end of each pass the speed must drop off so that the bar is not hurled from the rolls. The reduction of the speed at the end of the pass is suitable also for starting the next.

of the stroke and regulate the speed by throttling the steam. The continuous diagram shown in Fig. 6 admirably illustrates the operation of the engine.

Plant at Grand Crossing.

The 30-foot billets are loaded into cars at the steel plant from the cooling beds by a locomotive crane and shipped by freight to the main works of the Grand Crossing Tack Company at Grand Crossing, Ill. This manufactory consists of a three-story brick building, 150 x 800 feet, a rod mill, 75 x 200 feet, and supplementary buildings. The billets are unloaded from the cars and conveyed to the heating furnace of the Morgan continuous rod mill. This furnace has an inclined floor and is fitted with a device for feeding the billets by which every time a billet is admitted to the furnace the layer of bars is moved forward and downward on the inclined table. The angle of tilt of this table facilitates the movement of the bars, but is not sufficient to make them fall by gravity. When the desired heat is reached the bottommost billet is pushed outward through an aperture in the furnace wall into the rod mill. As the Morgan continuous rod mill has been described in previous issues of *The Iron Age* (c. g., May 23, 1901), it is not necessary to go into details here, except to say that the plant at Grand Crossing consists of 14 stands of rolls, the billet passing through six stands of roughing rolls before it reaches the flying shear

and eight finishing rolls thereafter. Mechanically operated reels eject their load when the desired size of coil is reached onto a slow moving carrier at the foot of the incline, the carrier conveying the coiled rods to a cooling floor. As the 30-foot billet weighs 300 pounds, there is nothing to prevent the formation of 300-pound coils of rods, though for convenience in handling in the wire mill

the annealing furnace to the back of the furnace, where they are passed over a roll, thence forward and through openings above the entering ports and thence forward across bearers through the galvanizing vats and brushes, after which each wire is coiled separately mechanically.

From the time the pig iron and scrap are loaded into the charging boxes at the steel plant until the first draft

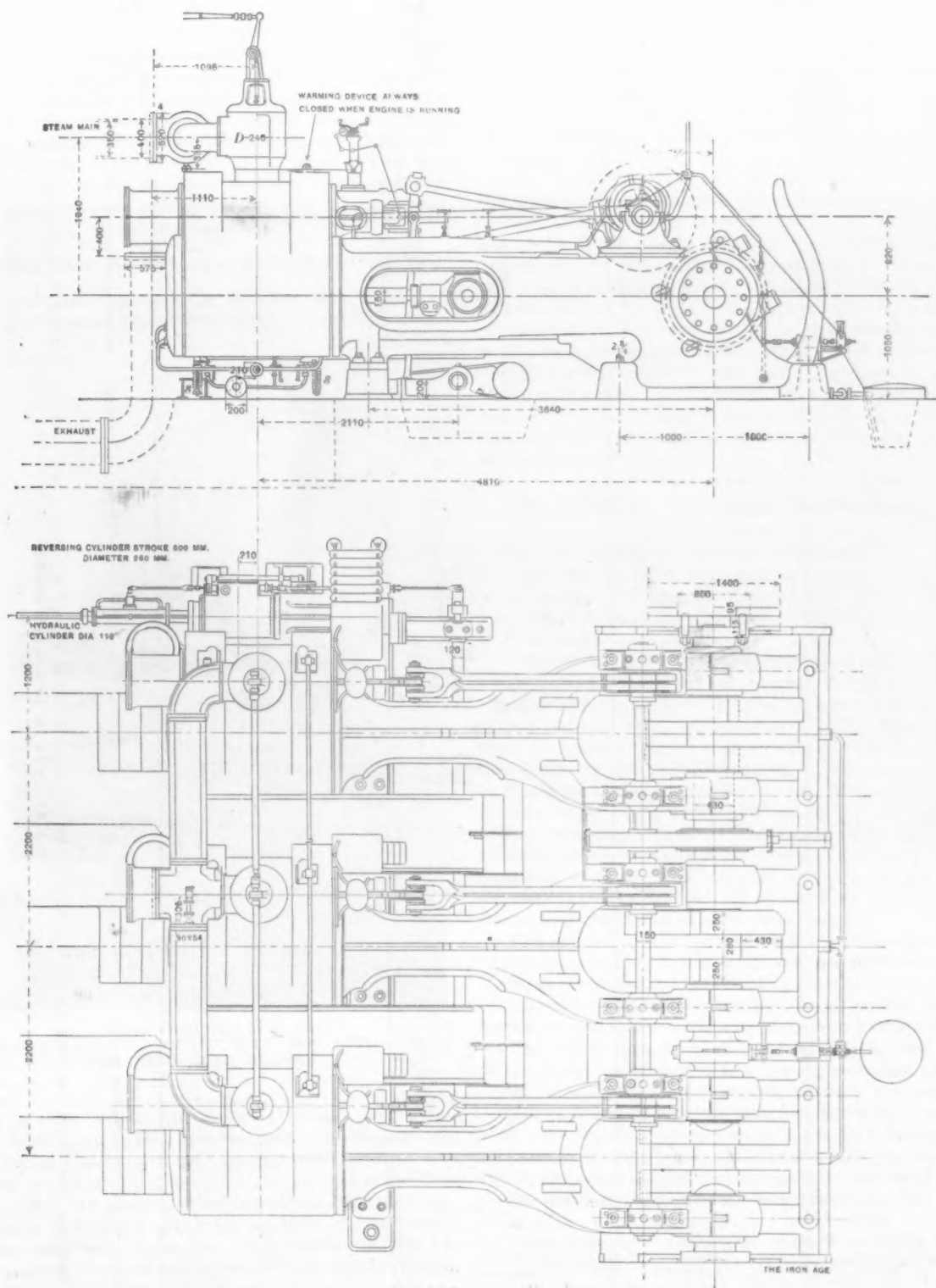


Fig. 5.—Grand Crossing Tack Company.—Side Elevation and Plan of Ehrhardt & Sehmer Engine.

the practice at Grand Crossing is to make two 150-pound coils from each billet. These 150-pound coils of rods are elevated from the cooling floor by means of cranes, which successively dip them in vats of acid, boiling water and lime. The lime coated rods are next conveyed to the wire drawing departments, where a large number of drawing benches are in operation. After the wire is drawn it is annealed and galvanized, this operation being different from that usually in force. The wires are conveyed through a large number of apertures in the front wall of

of wire is lifted from the wire drawing blocks at the Grand Crossing plant human hand has not touched the material except in guiding and operating the various mechanical and labor saving devices, cars, cranes, &c. This fact shows the development of modern mechanical appliances whereby large quantities of material can be handled daily at minimum cost of labor.

A Bit of History.

The Grand Crossing Tack Company began business in 1883 with ten tack machines in a building 38 x 100 feet

on the site of the present mill. E. W. Hutchinson, superintendent of the present plant, and A. J. Bassett were

associated with the Chicago Tack Company, which company was absorbed by the Grand Crossing Tack Company

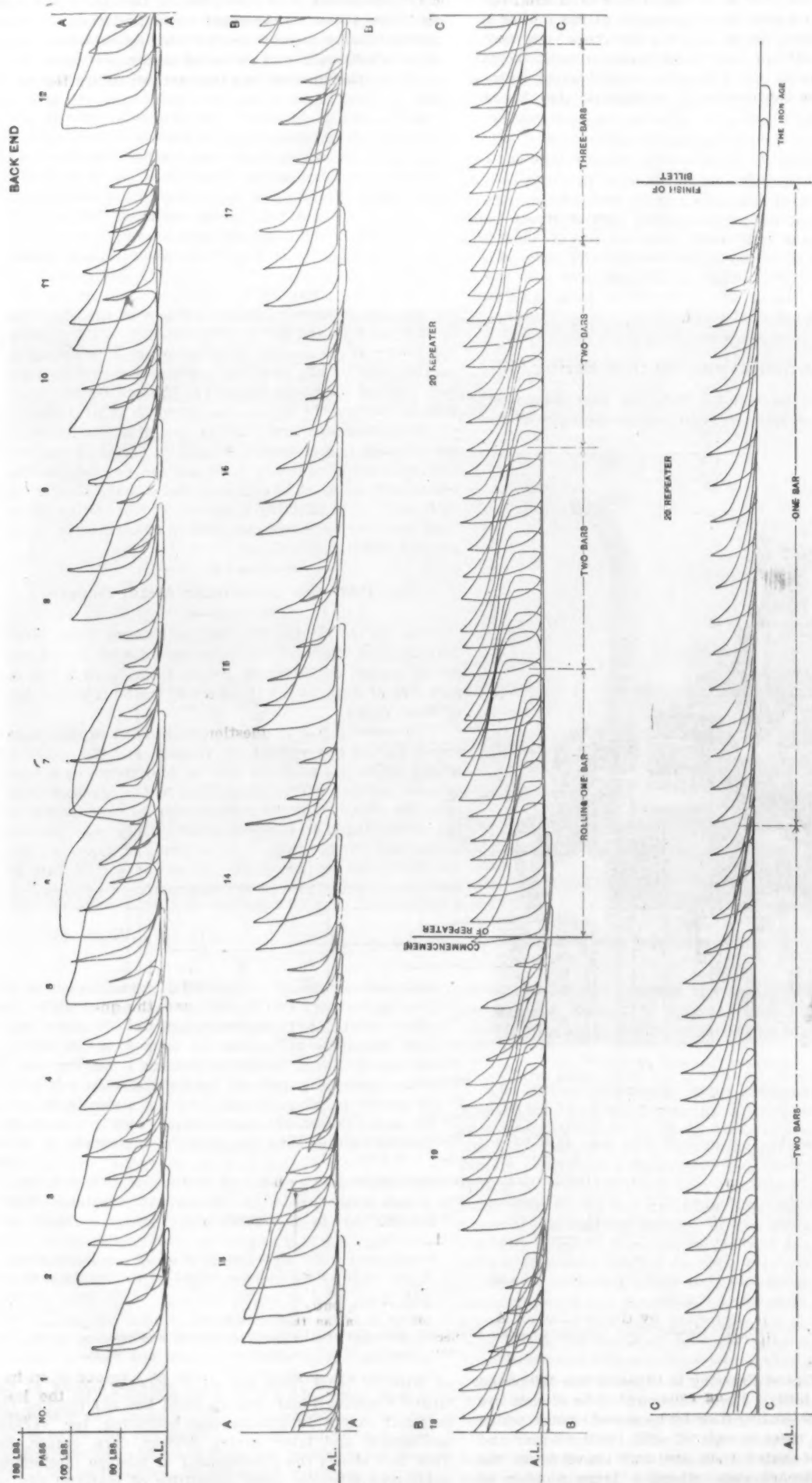


Fig. 6.—Continuous Diagrams from 30% x 39% Inch Ehrhardt & Sehnert Three-Cylinder Reversing Engine at Blooming Mill of Grand Crossing Tack Company.—Rolling from 17% x 15 Inch Ingots to 1% Inch Square Billets.

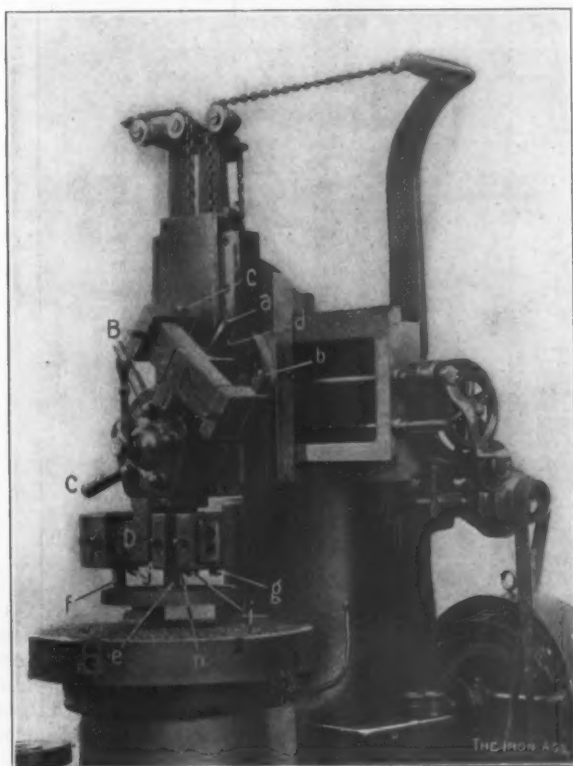
the founders of the business. Mr. Bassett died in April, 1902. O. N. Hutchinson, president and treasurer, entered the business in January, 1891, having been previously

a year later. In 1897, at which time the business had grown to quite large proportions, the plant was almost totally destroyed by fire and was quickly rebuilt. It has

been added to successively since then as the business grew. Ground for the steel plant was broken May, 1902, and as early as July, 1903, the plant was in partial operation, being in complete operation by September 1, 1903, making a full allotment of steel for the Grand Crossing plant. The capacity of the Grand Crossing plant in its earlier years was $\frac{1}{2}$ ton of tacks per day. The present output of the company is 150 tons of rods per day, about one-fourth of which are now sold on the open market and the balance worked up in the plant, making an aggregate finished product of 400,000 kegs. or 20,000 tons, of wire nails per year, 1500 tons of tacks made from tack plate, 12,000 tons of galvanized wire and woven wire fence, 5000 tons of barbed wire, 3000 tons of rivets, as well as smaller quantities of staples, glazier points, straight and cut wire and miscellaneous wire nails and brads and other wire products. The business now employs 850 people, 600 of whom are in the tack and nail works and 250 in the steel plant.

Finishing Gear Blanks on a 30-Inch Boring Mill.

An interesting method for finishing gear blanks of from 4 to 24 inches diameter, with but two settings of the



BULLARD 30-INCH BORING MILL EQUIPPED FOR FINISHING GEAR BLANKS.

work, is employed by the Bullard Machine Tool Company, Bridgeport, Conn. The tool used is a standard 30-inch boring and turning mill, with turret head, of the company's manufacture, equipped with a set of adjustable tools, which are shown in the accompanying engraving. The blank is secured to the revolving table by finger jaws gripping the inside of the rim. It is readily centered by the combination chuck and is leveled by parallel blocks of uniform height, upon which it rests.

The first operation is performed by the tool holder A, which carries a four-flip core drill, *a*, an outside turning tool, *b*, and facing tools, *c* and *d*, for the rim and hub, respectively. These tools completely rough one side of the blank while the hole is being rough bored by the drill. The second face of the turret carries a single point boring tool, *B*, which is run through the bore at a racing cut to insure concentricity, leaving just enough metal to be removed by the special universal joint reamer *C* on the third face of the turret to finish the bore to size.

The tool holder *D* is of the same pattern as *A*, but replaces the four-flip drill with a standard sized guide plug,

e, which, entering the bore, positions the tools on the holder so that their cuts will be concentric with those of the first operation, and also adds to the rigidity of the tools. Tool *f* finishes the outside of the blank to size and completes its operation before the finish-facing tools *g* and *h* are brought into action on the rim and hub. The corners of the rim and hub are rounded off by the tools *i* and *j*.

In the second setting of the work for the opposite side of the blank a stud which is the diameter of the bore of the blank is fitted into the center hole in the table, and a driving stud is set in one of the chuck jaw T-slots. The blank is then dropped over the center stud, and tool holder *A*, with tools *a* and *b* removed, roughs the faces of the rim and hub. These are finished by the corresponding tools in tool holder *D*, the round corners being formed as before.

The arrangement for holding the blank by its inner rim surface insures uniform thickness of the rim when finished, and by the use of the guide plug in the finishing tool holder *D* the outside diameter is not only turned accurately to size, but runs true on centers to within 0.0005 inch. All of the operations of the 12 tools are performed without moving the turret slide from its central position on the cross rail, thereby saving the time usually lost in setting tools and caliper diameters. Most of the tools employed are of ordinary form and can be used on other boring mill work. The company states that by using this equipment it is effecting a saving of from 50 to 75 per cent. over the more common method of separately chucking and turning on arbors.

The Duty on Composite Metal Sheets.

The United States General Appraisers, New York, July 26, 1904, rendered the following decision in the matter of protest of Hermann Boker & Co. against the assessment of duty by the Collector of Customs at the port of New York:

The merchandise in question consists of certain metal sheets having one surface of copper and the other of nickel, which are made by placing said sheets on a sheet of iron and then rolling them down to the required thickness, the pressure of the rolls serving to weld or roll all the sheets together into one sheet. Duty was assessed on the same at the rate of 45 per cent. ad valorem under the provisions of paragraph 193 of the act of July 24, 1897, as manufactures of articles composed of metal not specially provided for, and the importers claim that the merchandise is properly dutiable at the rates provided for in paragraphs 131 and 132 as sheets of iron or steel, common or black, coated with other metals.

This article is manufactured after the manner of manufacturing so-called rolled gold, and the question is, Is it coated metal or a manufacture of metal. While it may be true that plating is a species of coating, yet it can hardly be said that welding one plate on top of another is coating, either in a trade or tariff sense. To fall within the provisions of paragraph 132, a plate must be produced in a manner *ejusdem generis* with the methods therein enumerated—that is, either by galvanizing or dipping. We believe there can be no doubt that welding one plate on to another is not such method, nor, in fact, coating in any sense. This view agrees with the trade view, as disclosed by the importer's own testimony. He testified:

In the trade, under plated ware, or plated articles, it is generally understood that they are plated by electrolytic process, electrolysis. When selling this metal—and they call it plated metal—we frequently call their attention to the fact that it is not plated metal as they understand it—that is, produced by electrolysis—but that it is sheets of iron and steel coated with a heavy coating of metals produced by another process.

The precise question raised here was passed upon by this board under the act of 1894 adversely to the importers in G. A. 3819 (T. D. 17944) upon a protest filed by Hermann Boker & Co., the importers in the case at bar, and the principle there laid down has been uniformly observed for years in the classification of merchandise.

We find: 1. That the merchandise in question is not sheets of iron or steel, common or black, coated or galvanized with zinc, spelter or other metals. 2. That the

merchandise in question consists of articles composed of metal not specially provided for. The protest is overruled and the decision of the collector affirmed.

The Espen-Lucas Horizontal Floor Boring Machine.

A new horizontal floor boring, milling and drilling machine, designed by the Espen-Lucas Machine Works, Philadelphia, is shown herewith. In its principal features this tool resembles more expensive and larger machines, and is able to do the boring and a large amount of the milling heretofore requiring long milling machines. It is capable of an extra wide range of work and in large variety, being applicable to all operations of boring, tapping, reaming and various milling operations, such as key seating long, heavy shafting in short places, which formerly could only be done on a larger machine.

drilling. The machine is driven through a five-step cone pulley and has 20 changes of speed and 80 changes of feed. The gears are made of steel cut from the solid and the bearings are all bronze lined.

The machine can be equipped with a plain or compound table or with both. The platen is 42 inches wide by 84 inches long, and is well ribbed to carry large and heavy work. The removable tail support, shown on the machine in Fig. 2, is built with or without horizontal adjustment. For accurate adjustments screws with micrometer adjusting dials are attached when required. The countershaft is arranged so that the spindle can be run in either direction. The machine may be furnished with greater length and width of table and greater lengths of movements when the requirements demand it.

The Eastern Steel Company.—The shareholders of the Eastern Steel Company, Pottsville, Pa., voted on July

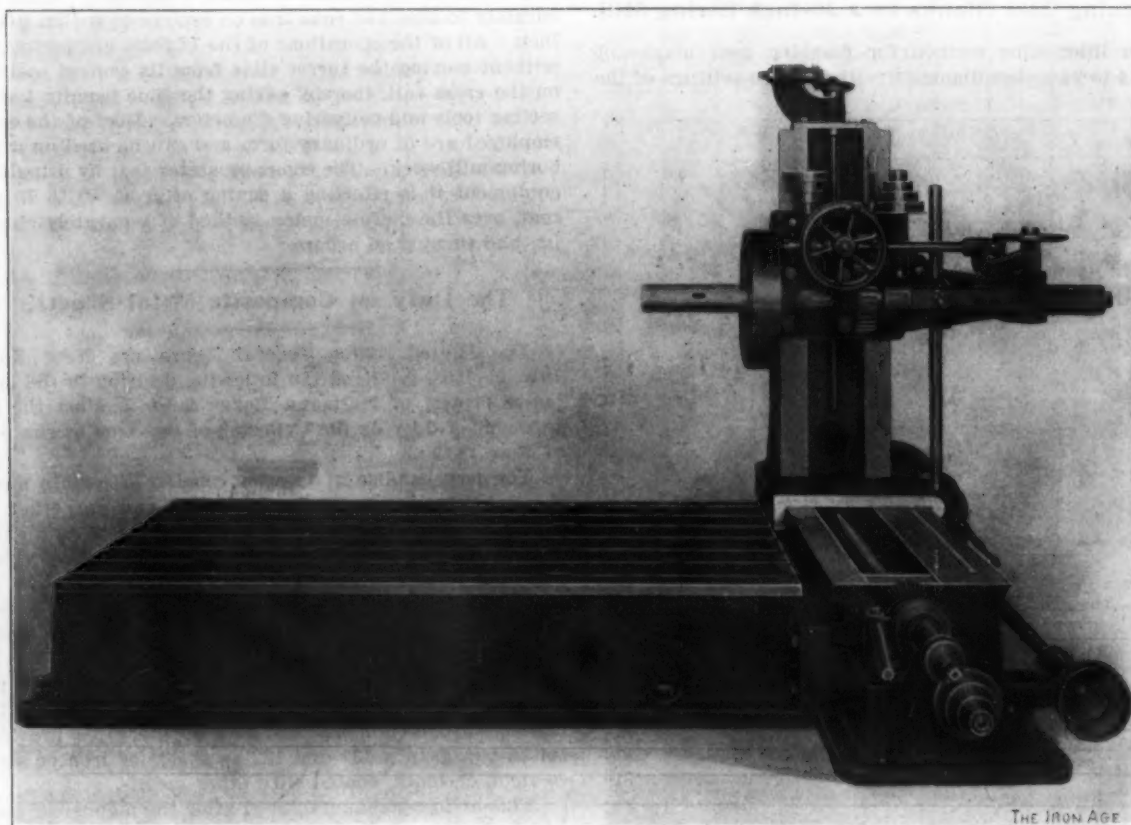


Fig. 1.—The Espen-Lucas Horizontal Floor Boring, Milling and Drilling Machine.

It can be used like a rotary planer for face milling with a rotary cutter head, will do all kinds of end milling, and can be used for cotter drilling and cutting key seats with an end mill. Large castings can be placed on the platen and all work finished without removing them.

The spindle, which is made of hammered crucible steel, is 4 inches in diameter and feeds through a gun metal sleeve. The boring bar has a longitudinal feed of 24 inches. It is bored in the end for a No. 6 Morse taper and has a transverse pin hole for retaining the bars and milling tools in place. The head has a vertical adjustment of 30 inches, and when it is to be used for milling can be securely clamped in any position. The column carrying the spindle head has automatic feed and quick return in both directions, giving a horizontal movement of 42 inches to the spindle head for milling operations. The spindle has feed in either direction for boring and counterboring both ends of cylinders.

One of the possibilities of the machine is that it may be used in place of the old style boring machine, where the work had to be adjusted to the spindle, instead of the spindle being adjusted to the work. It may also be used to relieve a milling machine of some of the large work which would require a larger tool. The spindle is powerfully geared for heavy work, with ample power for

26 to increase the capital stock from \$5,700,000 (consisting of \$3,500,000 common, \$2,000,000 first preferred and \$200,000 second preferred) to \$9,400,000, consisting of \$4,700,000 common, \$4,500,000 of first preferred and \$200,000 second preferred. Convertible 25-year 6 per cent. debenture bonds to the amount of \$2,500,000 were also authorized. The only output of securities at the present time under the above authorization will be an issue of \$1,500,000 of the debenture bonds, and for these the stockholders will have the privilege of subscribing. President Veryl Preston in a statement to the shareholders, it is reported, said: "It will require \$1,500,000 to finish the plant. If two more open hearth furnaces are added to the present four already installed, the plant will have a capacity of 180,000 tons a year. There should be a profit from the plant of between \$1,000,000 and \$1,500,000 a year, exclusive of the bridge works, which should turn out about 25,000 tons a year.

Joseph T. Ryerson & Son, Chicago, have completed an addition to their warehouse on Lake street which will be used for a sheet and plate shearing department. A 10-foot Cleveland gate shear, centrally located, will receive plates and sheets from three directions and shear them by electrical power, from which they will be delivered

to trucks destined for the shipping room, or will be conveyed by an electrical or pneumatic hoist and trolley system to various parts of the warehouse.

A Five Year Census of Manufactures to Be Taken.

WASHINGTON, D. C., August 2, 1904.—For the first time in the history of the Government, the Census Bureau is about to undertake a quinquennial census of the manufacturing industries of the United States, in accordance with a special act passed by the last Congress. Heretofore all census enumerations have been made at decennial periods, but the development of the resources of the country and the necessity for accurate statistical information regarding the leading industries induced Congress to provide for a special census of manufactures every five years.

Will Cover the Fiscal Year 1904.

The statistics to be collected for the first quinquennial census will cover the business year of each manufacturing establishment most nearly conforming to the fiscal year ending June 30, 1904, and special efforts will be made to strictly confine the data gathered to manufacturing processes. If a mercantile, mining or other business

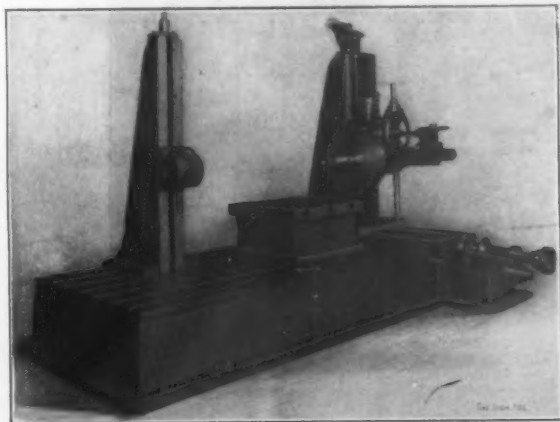


Fig. 2.—The Machine with Removable Table and Tail Support in Place.

is carried on in connection with manufacturing, the capital, employees, wages, expenses, products, &c., reported must pertain only to the manufacturing branch of the concern. It is obvious, therefore, that at this census considerable information will be obtained not heretofore secured, and that the results will not, in all cases, be comparable with the statistics of previous censuses.

The field work for the first five-year census has been divided into two undertakings. By special act of Congress authority was granted to the Census Bureau to co-operate with the State of Michigan in taking a census of the manufacturing industries of that State for the fiscal year ending June 30, 1904, and a large staff of special agents, under the supervision of Chief Statistician Steuart, left Washington a few days ago to begin the work of distributing and collecting the necessary schedules. The work of taking the census of the industries of the remainder of the country will not begin until next December, but, as already stated, will cover the fiscal year 1904.

A much more detailed classification of industries will be followed under the five-year census, especially in the preparation of special reports, than has been adhered to in preparing the decennial statistics. The development and specialization of certain industries, have rendered former classifications obsolete and misleading, and an effort will be made in connection with the five-year census, to establish a new basis for comparison that will stand for several census periods to come. The detailed classification has not yet fully been determined, but special reports based on detailed schedules will be prepared for the following industries: Rolling mills and steel works, blast furnaces, metal working machinery, needles and pins, stoves and furnaces, electrical machinery and ap-

paratus, agricultural implements, carriages and wagons, steam and street cars, railroad repair shops, copper smelting and refining, lead smelting and refining, explosives, &c., &c.

The Scope of the Schedules.

The general schedule upon which the statistics for the five-year census will be gathered has already been prepared. It includes returns covering character of organization, date when present organization commenced operations, character of industry, capital invested, proprietors and firm members, salaried employees, wage earners, including piece workers; average number of wage earners employed during each month, miscellaneous expenses, materials used, products, classified earnings of wage earners, time in operation during the year, and power employed.

In compiling statistics for past censuses much difficulty has been encountered in classifying finished products so as to avoid duplication, for it frequently happens that the finished product of one industry is the raw material of another. To secure a more accurate classification, manufacturers will be asked to separate as carefully as possible those materials used in the raw state, such as iron ore, raw cotton, &c., which have undergone no process of manufacture, from those used in partially manufactured form, such as bar iron, steel, leather, &c. For those industries for which special reports are to be prepared supplementary schedules will be sent out in such form as to permit of an accurate detailed return of all materials, showing designation and value, and carefully differentiated from fuel, mill supplies, such as oil, waste, &c.

Statistics of By-Products.

There has been some criticism regarding the statistics of past censuses, that the by-products of the leading industries have not been shown in sufficient detail, and that as a result large quantities of certain commodities have been concealed under the general heading of "All Other Products." Even where it is not practicable to report in detail the values of all by-products, manufacturers will be requested to enumerate them so far as possible, so that the compilers of the returns may be advised of all the sources of such by-products, and, if it is deemed desirable, may set on foot such supplementary investigation as is necessary to obtain more accurate statistics.

For the purpose of avoiding the necessity of gathering special statistics with regard to wages in the principal industries, general schedules for the coming five-year census will include a new heading covering "classified earnings of wage earners, including piece workers, for the week during which largest number of persons was employed." A form has been prepared for these returns, graduated by small intervals from \$3 per week to \$25 per week and over, and showing the number of men, women and children (under 16 years) employed. These statistics are to be reported in addition to the regular returns showing the number of wage earners, including piece workers, and the total amount received in wages, and are designed to reflect the conditions in each industry during the period of maximum output.

In soliciting considerable information not heretofore acquired, the census officials call attention to the pledge given by the bureau, that all answers will be held absolutely confidential, that no publication will be made of the census reports disclosing the names or operations of individual establishments in any particular, and that the information will be used only for the statistical purposes for which it was given.

W. L. C.

The railways of the United States employed during 1903 no less than 1,189,315 men, of whom 41,071 belong under the general head of administration, 399,592 were under the departments of maintenance of way and structures, 228,280 under maintenance of equipment, 518,390 were engaged in conducting transportation and 1982 were unclassified. Of those engaged in conducting transportation, only 225,422 were actually trainmen, 48,318 being engineers, 50,651 firemen, 35,070 conductors and 91,383 brakemen and other trainmen. The total number of employees figured out at 5.94 per mile of line in operation.

The Pawtucket Cold Nut Press.

The cold punching nut press shown in the accompanying illustrations is said to be the largest and most power-

gears in the train are machine molded. The heavy clutch which controls the operation of the machine is worked by two tool steel pins, G and H, which strike against hardened pins that are forced in the block F. The clutch



Fig. 1.—General View of the Pawtucket Cold Nut Press, Showing Arrangement for Driving from Countershaft.

ful machine of its type that has ever been built. It is capable of punching $2\frac{1}{2}$ -inch nuts at the rate of seven a minute, which involves the cold punching of stock $2\frac{3}{4}$ inches thick. Under test, it has accomplished the much more difficult task of punching $2\frac{1}{2}$ -inch holes through iron 3 inches thick, and also $\frac{3}{4}$ -inch holes through 3-inch iron, which, it is claimed, is a record for cold punching. The machine was built by the Pawtucket Mfg. Company, Pawtucket, R. I., for a Western customer, and will be used in the manufacture of the largest nuts ever made by the cold punching process.

The body of the machine consists of three heavy iron castings, A, B and C in Fig. 3, surmounted by a steel cap, D, weighing $1\frac{1}{2}$ tons. The upper casting C is dovetailed into the cap. The castings and caps are held together very rigidly by heavy T-bolts 4 x 8 inches in section and two screw steel tie bolts $3\frac{1}{2}$ inches in diameter. Very heavy forged steel wedges are driven in under the T-heads of the bolts, the wedges being tapered in both directions toward the shank of the bolt, for the purpose of tightening the bolts when required. The castings are also held together in the rear of the steel cap by four screw steel tie rods 3 inches in diameter, and are held in place by taper keys and dowels in sections, as shown between A, B and C.

The balance wheel, weighing $1\frac{1}{2}$ tons, revolves at 339 turns a minute, and is driven by a 12-inch double belt. There are three sets of gears between the fly wheel and the eccentric shaft, making it double compound. The main gear E is 8 feet in diameter, has an 11-inch face and teeth of $3\frac{1}{2}$ -inch circular pitch. The ratio between the balance wheel and the large gear is $48\frac{1}{2}$ to 1. All the

is easily operated by means of a lever arm at the side of the machine connected with shipper arm J.

The main shaft is of hammered nickel steel, 12 inches in diameter in the front bearing and $11\frac{1}{2}$ inches in the rear bearing. The bearings are very long, being 21 inches

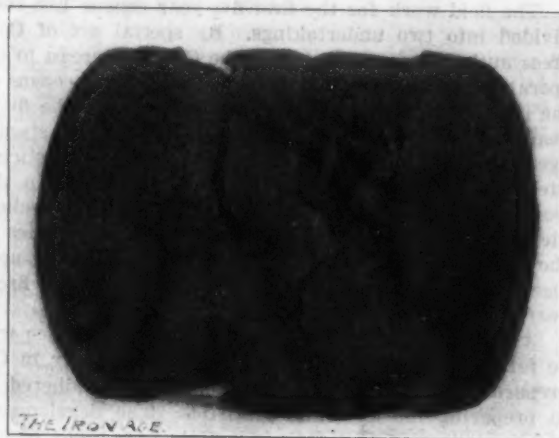


Fig. 2.—Actual Size of a Cold Punched Slug.

in the front and 18 inches in the rear. The eccentric, which is forged as a part of the main shaft, is 13 inches in diameter, and gives a $3\frac{1}{2}$ -inch throw. The plunger socket I is $5\frac{1}{2}$ inches in diameter. The machine weighs 41 tons, and measures 12 feet from the floor to the top of the large gear.

Central American Notes.

SAN JOSÉ, July 22, 1904.—There is no truth in the rumors and published accounts of the repudiation of railroad bonds by Honduras. What that Republic is trying

the Atlantic & Pacific Railway. Of course, the British and French bondholders, on hearing of this, will protest, but the Honduras Government means to protect their interests when the line is handed over to the American company.

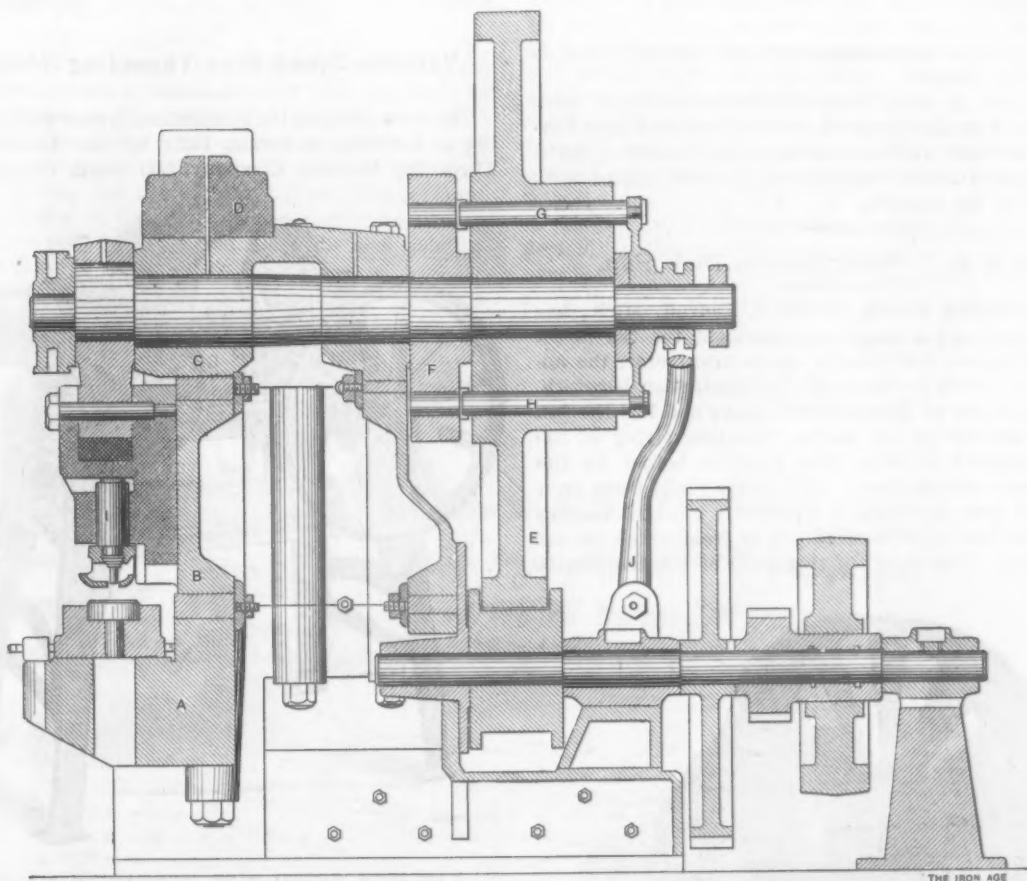


Fig. 3.—Sectional View of Pawtucket Cold Nut Press.

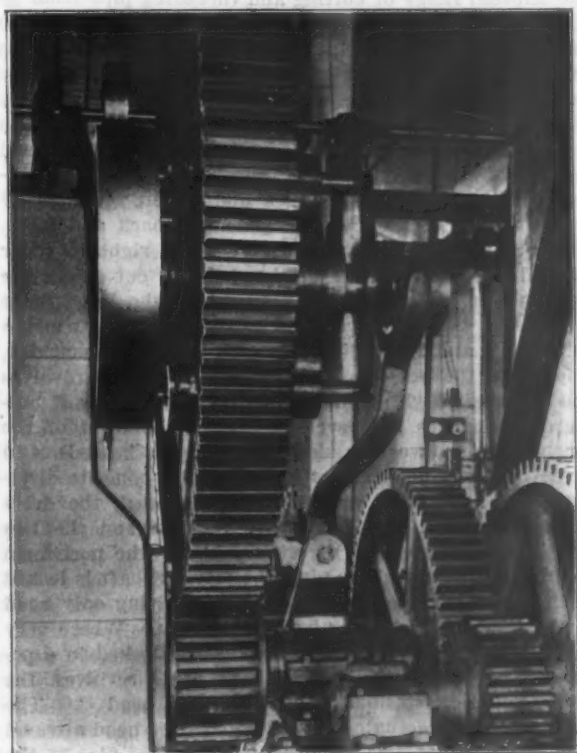


Fig. 4.—Detail of the Gearing and Clutch Mechanism of Pawtucket Cold Nut Press.

to do is to determine how many genuine bonds are in existence, as not a few of those presented are claimed to be forged. President Bonilla is at the capital, Tegucigalpa, and is trying to induce the Congress to grant a concession to an American syndicate to build the remainder of

Whatever line of industry the manufacturers of the United States may be engaged in, it is of the utmost importance that they watch the production and development of these countries closely, if they wish to get rid of their surplus. For instance, many new fruit plantations are being set out on the north coast of Honduras; practically all of the production will go to the United States, principally through New York, New Orleans and Mobile. The nearest points where they can get machinery, cotton goods, tools, cloths, &c., are the ports mentioned. Here we have natural reciprocity, and the same may be said of the coffee planter, the mahogany camps and the mines. As the Central American is a spendthrift, vast amounts of money disbursed for the canal will soon return to the United States in exchange for goods of all kinds. For those who will now watch the commercial development in the canal (or Central American) countries there will be a golden harvest. For regions so prolific nothing but capital and American energy is now required.

Nicaragua is negotiating a loan in the United States and Europe for the purpose of building a railway through the mosquito, or Bluefields, region, and a connecting line to the Pacific. All the surveys have been made, and it is calculated that \$5,000,000 will build the new line, as also piers and steel storehouses at Bluefields and San Juan.

Salvador, and especially the capital, San Salvador, will continue importing steel and iron buildings and material for them, this having been found the only way to withstand the frequent earthquakes in a land where there are as many as 20 shocks in a week. The loss of the "Starbuck," the "Cheribon" and several other steamers has caused the Government to seriously consider putting up steel lighthouses at Acajutla, La Libertad and La Union, as well as on Remedios reef on the Pacific.

In Guatemala and Chiapas much enthusiasm is shown for the links proposed for the Pan-American Railroad through both States. The northern end of the line now

reaches Oajaca, and the southern extension is near Quezaltenango. Between these we have the Ocos Railway, which is a German enterprise.

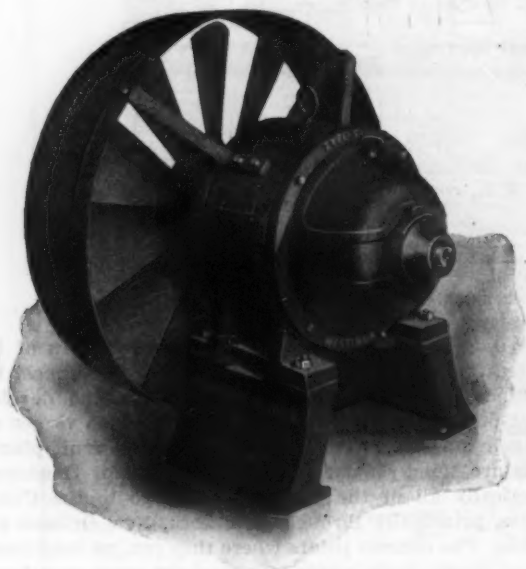
Merchants and business men generally are still fighting the Pacific Mail Steamship Company, because of its rates and its methods, which do not please the Central Americans, who are hoping that competing American lines will soon be established, now that the first work on the canal has begun.

The Keith & Van Horne Syndicate continues work in Guatemala on the Northern Railroad, several ships having arrived with rails, locomotives and building materials. As soon as the rainy season is over, active work will begin in the uplands.

c.

The A B C Motor Driven Disk Fan.

The American Blower Company, Detroit, Mich., has recently perfected a simple arrangement for the direct driving of a steel disk fan by an electric motor, the appearance of which is shown in the illustration herewith. The motor is one of Westinghouse make and has the fan mounted directly on the shaft. The guard ring of the fan is supported by strap iron brackets bolted to the motor frame and the base. The motor itself rests on a substantial base, elevating it sufficiently to allow the fan to clear the floor or structure upon or from which the set is supported. The object of this form of construction is



THE A B C MOTOR DRIVEN DISK FAN.

to secure a greater rigidity than is found in the old designs, where the motor has its only support in arms attached to the fan casing.

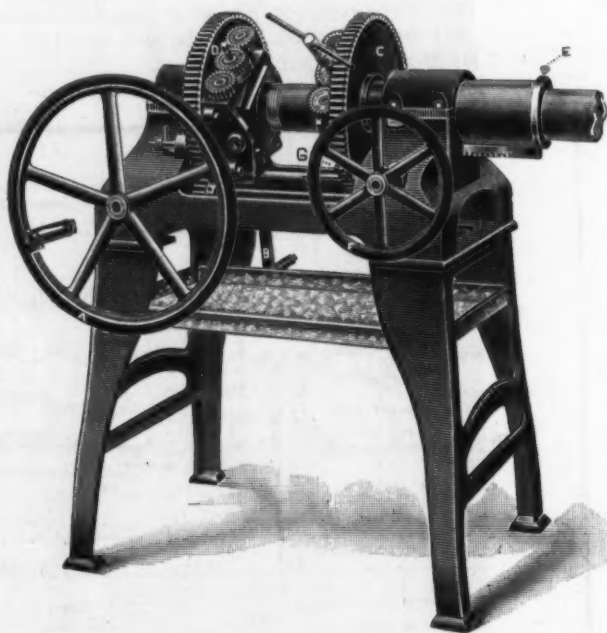
The Richmond Foundry & Mfg. Company, Richmond, Va., manufactures high grade castings in gray iron, brass and bronze, making specialties of gray iron bench castings and of high grade machinery castings, which are furnished plain or machined to drawings. The company designs and builds special machinery or builds from customers' designs to order. It also makes patterns in wood or in metal, and makes and mounts metal patterns for use in molding machines. Another branch of business in which this company is interested is the manufacture of novelties to order. These novelties are sometimes intended for practical use, such as match safes, &c., while others are distributed by the buyers for advertising purposes. Work of this class is generally nickel plated.

It has been definitely decided that members of the Lake Superior Mining Institute will visit Milwaukee in a body immediately following their annual meeting at Ironwood, Mich., August 16. It is expected that there will be 200 members in the party who will go to Milwaukee by special train and spend two days in that city,

where they will be entertained by the various mining machinery companies. It is planned to take the visitors on a tour of inspection to the Bay View Works of the United States Steel Corporation, the plants of the Allis-Chalmers Company, the Prescott Steam Pump Company and the Nordberg Mfg. Company, and possibly to others.

Variable Speed Pipe Threading Machine.

In the accompanying illustration, is shown a pipe threading and cutting machine, built by the American Pipe Threading Machine Company, 200 South Clinton street,



VARIABLE SPEED PIPE THREADING MACHINE.

Chicago, which has three changes of speed, and which has the unusual range of cutting and threading pipe from $\frac{1}{8}$ inch to 4 inches in diameter. The pipe is inserted in the barrel at E, bushings being furnished so that long lengths of pipe may be kept well centered in the barrel. These bushings are set in the end of the barrel and held fast by a thumb screw. The pipe is clamped in place between serrated vise jaws by means of a key at the sliding head C, and the same key, at D, is used for locking or unlocking the threading die. A rack and pinion, operated by the wheel F, moves the sliding head C back and forth, the operator moving the wheel F to the right in order to feed the pipe into the die head. The cut shows the hand power type of machine, in which the large drive wheel A is used to revolve the heads. This shaft moves in a sleeve, and by pushing it inward toward the machine, it engages the beveled gears at the back and revolves the relatively high speed head at C. By pulling it outward it engages the beveled gears in the front of the machine and moves the slower motion die head D. In a central position, it moves both heads in opposite directions. Where small pipe is being threaded, the drive wheel is thrown into its central position and the two heads move in opposite directions, giving the maximum speed. For intermediate pipe, the driving shaft is locked in the position closest to the machine, driving only head C and leaving the cutting head stationary. Where very large pipe is being threaded, the shaft is locked in a position where only the cutting head at D revolves, the pipe remaining stationary in the clamp head C. The rack and pinion actuated by pin F gives the head a travel of about 8 inches, being sufficient to feed the pipe to the die for a continuous thread of that length; but provision is made for threads longer than 8 inches, by releasing the vise jaws and back head at C as far as possible, tightening the jaws and operating as at first, making another cut of 3 inches. This can be continued indefinitely. The hand crank wheel at A may be taken off and replaced with a pulley where belt power is desired.

The Lookout Mountain Iron Company.

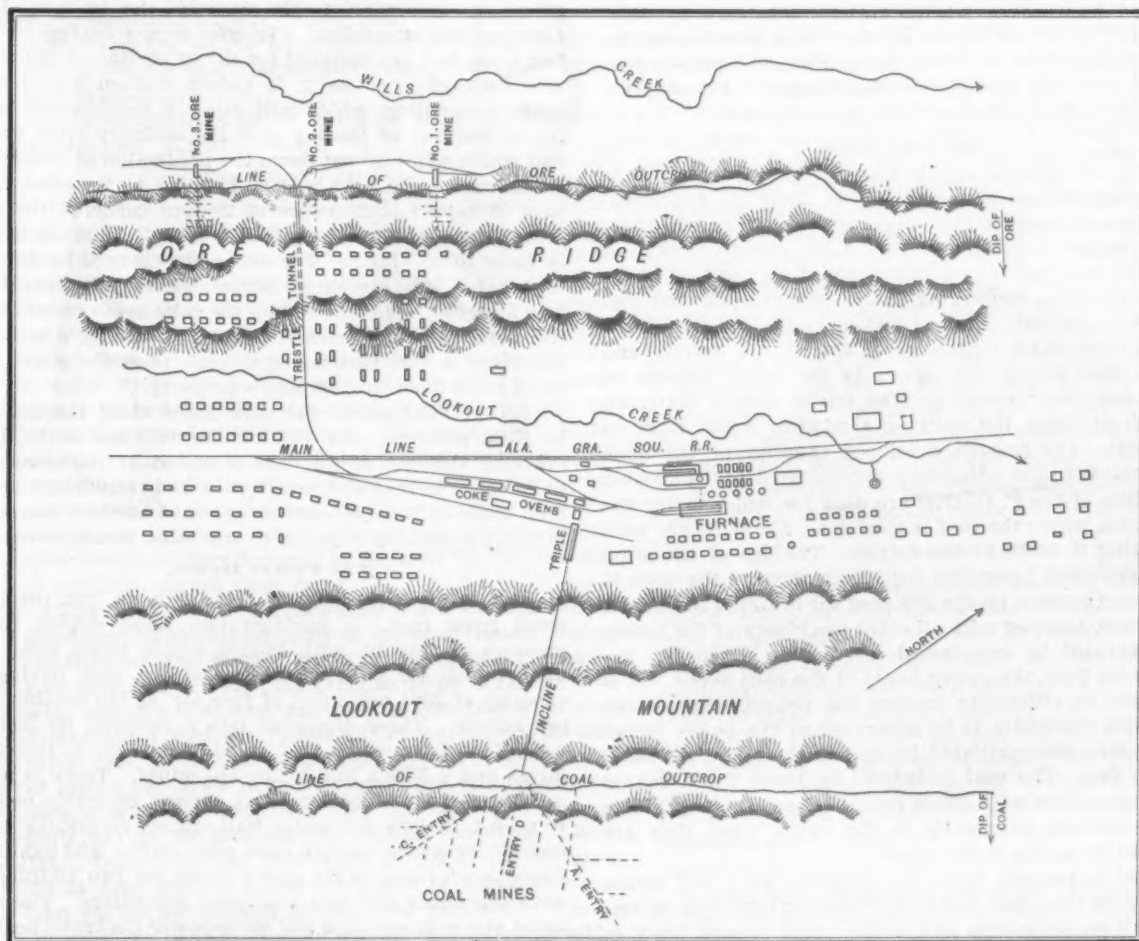
Description of the Company's Property and Plant at Battelle, Ala.

The Lookout Mountain Iron Company was organized in April, 1902, under a special charter from the State of Alabama, with a capital stock of \$1,000,000, to acquire and develop some 15,000 acres of coal and iron ore lands lying in a contiguous body and situated in De Kalb County, Alabama, and the adjoining Dade County, Georgia. The charter of the company is a very valuable one, and could not now be duplicated, since the new constitution of the State of Alabama went into effect.

The directors of the company are J. G. Battelle, presi-

and 109 miles north of Birmingham, Ala. The railroad runs northeast and southwest through Wills Valley, which is about $\frac{1}{4}$ mile wide at Battelle, the valley being bounded on its east side by Lookout Mountain, rising 1000 feet above the railroad, and on the west side by a foothill or ridge rising 200 feet above the railroad and locally called the Ore Ridge. The property of the company extends from Sulphur Springs, Ga., 3 miles north of Battelle, to Valley Head, Ala., 6 miles south of Battelle, lying largely along Lookout Mountain, but including the valley and Ore Ridge in the vicinity of Battelle.

The company's property on Lookout Mountain is underlaid by a seam of fine coking coal, 36 inches in thickness, and outcropping the entire length of the property along the brow of the mountain, and extending eastward-



MAP SHOWING THE LOOKOUT MOUNTAIN IRON COMPANY'S MINES AND FURNACE PLANT.

dent of the Columbus Iron & Steel Company, Columbus, Ohio; J. A. Andrews, president of the Newport Rolling Mill Company, Newport, Ky.; H. A. Marting, president of the Marting Steel & Iron Company, Ironton, Ohio; D. B. Meacham, president of the Cleveland Furnace Company, Cincinnati, Ohio; J. H. Frantz, treasurer and general manager of the Columbus Iron & Steel Company, Columbus, Ohio, and James Bowron, vice-president of the Dimmick Pipe Company; G. B. McCormack, president of the American Trust & Savings Bank and of the Ivy Coal Company; Erskine Ramsay, vice-president and chief engineer of the Pratt Coal Company, and James L. Gaines, late assistant general manager of the Tennessee Coal, Iron & Railroad Company, Birmingham, Ala.

The officers of the company are J. G. Battelle, president, Columbus, Ohio; G. B. McCormack and Erskine Ramsay, vice-presidents, and James Bowron, chairman, Birmingham, Ala., and J. F. Stiens, secretary and treasurer; C. E. Bowron, general superintendent, and John Dowling, furnace superintendent, Battelle, Ala.

Location of the Plant and Property.

The plant and main office are located at Battelle, Ala., on the main line of the Alabama Great Southern Railroad (Q. & C. system), 34 miles south of Chattanooga, Tenn.,

ly the breadth of the mountain, from 4 to 6 miles, outcropping again on its eastern escarpment, and the entire property is underlaid by a vein of fossiliferous red hematite ore from $4\frac{1}{2}$ to $5\frac{1}{2}$ feet in thickness, this outcropping at the western base of the Ore Ridge, dipping eastwardly under the Ore Ridge, Wills Valley and Lookout Mountain, forming a basin, and reappearing on the eastern side of Lookout Mountain, where it is being also worked.

It is believed that this conjunction of a workable seam of coal and a workable vein of ore within a stone's throw of each other and of the furnace plant constitutes an entirely unique proposition in the iron world, and one which is only approximated at a few other highly favored plants. This has permitted a layout which will enable the company to obtain its entire supply of these raw materials without the payment of one cent for royalty or railroad freights.

In addition to the seam of coal which is being developed, there is one, if not two, other seams of workable thickness outcropping at either extremity of the property, but not yet exploited in the immediate vicinity of the present mines. There are also two veins of ore, from 24 to 30 inches in thickness, outcropping below the main

vein, which are valuable for their outcrop ore, this being easily mined. At the base of Lookout Mountain, and above water level, there is a stratum of Bangor limestone several hundred feet in thickness and of good quality, which will be worked if desired. Ample water supply for all purposes is obtained from a creek in Wills Valley and a second creek at the western base of the Ore Ridge, and in addition there are several large springs along the base of Lookout Mountain used for the supply of domestic water. All timber required for the coal and ore mines, &c., is easily secured from the company's own lands.

The map herewith given shows the general layout of the coal and ore mines, coke ovens, furnace plant, &c. Work was actively begun in October, 1902, at the coal mines and on the coke ovens, tenement houses, &c. Ground was broken for the furnace February 23, 1903. The coal mines and coke ovens have been in operation for some months, and the ore mines and blast furnace are expected to go into operation within 60 days. A description of the principal features of the plants follows:

The Coal Mines.

The coal seam is locally known as the Eureka. It is being also worked at several places along the Cincinnati Southern Railroad under other names. There are three main entries being driven, one going directly southeast with the dip, and one on either side at an angle of 45 degrees, the three converging to one central tippie and constituting the main haulage and air ways for the mines. From these main entries room entries are driven, and from these rooms are turned in the usual manner of room and pillar working. The top is usually slate, although at times the outlying sandstone comes right to the coal. The present developed capacity of the mine is about 400 tons. Harrison air operated coal punching machines of the P. G. type are used for undercutting the coal, and, where the roof is sandstone, air drills are used in taking it down in the entries. The dip of the seam averages about 5 per cent. for 1000 feet, when the basin is struck. Cameron pumps are used for draining the mines, and these, together with all other machinery at the mines, are operated by compressed air, which is sent up the mountain from the power house at the coke ovens. It is intended to ultimately operate the pumps, engines and fan with electricity to be generated at the power house. The mines are ventilated by an air shaft and a 10-foot Brazil fan. The coal is hoisted by three Flory geared hoisting engines with single friction drum, the empty cars being lowered by gravity to the basin, when they are handled by mules to the rooms.

Coal is lowered down the mountain by a self acting gravity incline, 2300 feet long, this being three-rail on top, two-rail on the bottom and double track passing track in the middle, with automatic switch, the incline being laid with 60-pound rail. Two incline cars are used, each having a capacity of 8 tons of coal, and being attached to a 1¼-inch rope which passes around two 8-foot drums on top, these drums having two powerful band brakes, also a fan governor for controlling the speed of the trips. A trip is made in 3 minutes. The top tippie at the mines has a bin holding 200 tons, the incline cars being filled through doors in the bottom of the bin. The incline has an electric signal and telephone.

The bottom tippie is provided with a bin holding 100 tons of coal, and is so arranged that the coal may be either screened and shipped, the screenings being either loaded or sent to the coal washer, or the entire output may be sent through the crusher and washer, as is being done at present. The crusher is a No. 3 Williams, and is so arranged that only the coal passing over a 2½-inch bar screen is crushed, the screenings passing down a chute through the crusher foundation to the elevator taking the crushed coal to the washer. The coal washer is a two-tub Robinson-Ramsay washer with sludge tank and two No. 9 Pulsometer steam pumps. The washed coal is carried from the washer to a 500-ton washed coal bin by conveyors provided with perforated bottoms of manganese bronze to drain the coal. The crusher, washer and conveyors are all driven by direct current motors, the current being supplied from the power house at the coke ovens.

An analysis of a sample of the coal showed the fixed carbon to be 68.85 per cent.; volatile matter, 23.60 per cent.; ash, 7.55 per cent. The sulphur contents showed 0.11 per cent., and the specific gravity was 1.38.

The Coke Ovens.

There are 150 beehive block ovens in four batteries, they being 12½ feet in diameter and 7 feet 8 inches high. A space of 50 feet is left between the batteries for the location of boiler plants, one space being so utilized at present, as noted later on. The larry track runs down the center of the batteries, being standard gauge and of 100-pound rail, the rails being supported by brick pillars built independently of the oven brick work, the pillars being provided with cast iron caps, on which rail ties of 60-pound rail rest and support the 100-pound rail. The 100-pound rail is secured to the 60-pound ties by iron clips allowing free expansion. The coke oven wharves are 12 feet wide, and are designed for direct loading of the coke into railroad cars as it is pulled without any intermediate handling, which will allow a considerable saving in the cost of loading over the ordinary wide yard, and which will also cut down the production of breeze to a minimum. The coke will be handled to the blast furnace in hopper bottom cars of 20 tons capacity, the average length of haul being 1800 feet and the grade being in favor of the loads. The ovens are charged by two 7-ton double side discharge larries, electrically operated. The fire brick used in building the coke ovens came from the Bessemer Fire Brick Company, Bessemer, Ala., and Montague & Co., Chattanooga, Tenn., and the stone for walls came from the company's property.

Recent analyses of the coke made show the ash to be 15.20 per cent. and the sulphur 0.68 per cent. The crushing strength of the coke is stated by the company to be equal to that of Connellsville, and tests which have been made in foundry cupolas are said to show the coke in melting capacity superior to any other Southern coke.

The Power House.

This is of brick, 30 x 95 feet, with an iron covered wood truss roof. It contains two Rand duplex compressors of type 10, with 18-inch simple steam ends, 28 and 17 inch air ends and 24-inch stroke, each having a capacity of 2394 cubic feet of free air at 140 revolutions per minute. These discharge into a receiver, 60 inches by 18 feet, from which lead an 8-inch air line to the coal mines and a 5-inch line to the ore mines. There is also a 65-kw. Crocker-Wheeler direct current generator belted to a 14 x 12 inch automatic Ball engine, furnishing current for the washer motors, coke oven larries and lighting. Space is provided in the power house for two additional air compressors and two additional generators. The exhaust steam is sent to a 700 horse-power Cochrane heater or by-passed through an exhaust head. The plant is provided with Cochrane separators, oil filters, &c.

Steam is provided by two Wickes 250 horse-power vertical water tube boilers, located between the second and third batteries of coke ovens, the power house being located just opposite this point, 150 feet away. The second battery of ovens is provided with a flue running the full length of the battery, the flue having a connection to each oven and being connected at its extremity to the boiler fire boxes. In this way the waste heat and gases from the ovens are utilized under the boilers for the generation of steam, replacing coal firing and allowing a very economical power production, it being estimated at another plant that the equivalent of 10 horse-power can be obtained from each coke oven connected to the flue, provided, of course, that the ovens are drawn and charged regularly with 48-hour charges.

The machine shop is temporarily installed in one end of the power house, and its equipment includes a lathe, drill press, pipe and bolt cutting machines, &c., all operated from an electrically driven main shaft.

The Ore Mines.

Three slopes have been driven on the vein, dipping from 30 to 45 degrees, each slope being now about 200 feet deep. From either side of the slopes working headings or rooms are driven, approximately at right angles and so as to be self draining. The slopes are driven about 10 feet wide and the side headings about 25 feet wide,

pillars 15 feet wide being left between adjacent headings, and the headings being driven only 8 feet wide for a distance of about 30 feet from the slopes, when they are widened out to full width. Ingersoll-Sergant 2¼-inch arc tappet air drills are used both in slope sinking and in working the headings, the ore being too hard for hand ratchet drills. The skip system of haulage is being installed, and 4½ feet in thickness of bottom is being taken up in the slopes to accommodate the skip car, the mine cars in the headings dumping into the skip car by turn over tipples, one tipple being used for two opposite headings. The skip car will dump automatically on top into a small bin, from which the ore will pass over a bar screen to a No 7½ Gates crusher, thence into a 150-ton storage bin. Each slope is provided with individual tipple, crusher, &c., and crushed ore from the three mines will be gathered by a steam dinkey locomotive of Vulcan make in 15-ton hopper bottom cars, passing through a tunnel through the Ore Ridge 686 feet long, thence on a trestle across the valley and crossing the Alabama Great Southern Railroad overhead, thence over yard tracks to the furnace stock house.

A recent analysis of the ore from slope No. 2 shows metallic iron 37.07 per cent.

The Blast Furnace.

The furnace stack is 85 feet high, with 19-foot 6-inch bosh, 12-foot crucible, 15-foot stock line, 9-foot bell, 12 tuyeres, 8 columns, I-beam mantel, cast iron tuyere and crucible jackets and bronze bosh blocks with crinoline bands. The shell of the furnace will permit a future lining 1 foot larger if deemed desirable. The bosh extends below the mantel and has a short steel jacket and is water cooled with pipe coils. There are two downcomers 51 inches in the clear and two dust catchers 14 feet in diameter and 18 feet high. The gas and air mains are all overhead and are provided with a number of dust legs, the gas downtakes to boilers and stoves being also provided with cleaning and explosion doors. The furnace has two cinder notches. The bosh jacket is provided with four auxiliary tuyeres to be used in the removal of scaffolds, should these occur.

The furnace will be charged by a Brown single track skip hoist and stock distributor of the most recent design, installed by the Brown Hoisting Machinery Company, Cleveland, Ohio. The stock house is of wood, 54 feet wide and 234 feet long, and may be indefinitely extended as desired, its present capacity being a two weeks' supply of ore, and the main coke bin will hold a day's supply of coke. The stock house has three overhead tracks for unloading stock. An electrically operated transfer car built by the Wellman-Seaver-Morgan Company, Cleveland, Ohio, runs on four lines of track on the stock house floor level, reaching every part of the stock house, and the entire contents of the stock house will run by gravity into the transfer car without any handling whatever, the bins being arranged to this end.

The cast shed is of steel, 70 feet span and 240 feet long, with an umbrella extension back of the furnace, the roof being of No. 20 galvanized corrugated iron and the siding of No. 24 gauge. The building was erected by the Virginia Bridge & Iron Company, Roanoke, Va. Outside cast beds for both iron and cinder are provided for emergencies. Both the main cast shed and outside iron bed are provided with depressed iron breaking wharves and depressed tracks below the wharves, for the direct breaking and loading of pig iron without the usual transfer to an iron yard, saving the cost of one handling.

There are four stoves, with shells 21 feet by 80 feet high, these being lined up as four-pass Whitwell. Each stove is provided with two Morrison-Kennedy 22-inch chimney valves, three 14-inch air valves, four 20-inch bottom and seven 32-inch top cleaning doors, one 18-inch gas burner and 27-inch hot and cold blast valves. The stoves are served by one central draft stack 8 feet inside and 180 feet high, of steel, with fire brick lining, the stoves connecting thereto by short underground flues.

The boiler plant includes 20 100 horse-power horizontal flue boilers, each boiler having 26 6-inch riveted flues, the shells being 72 inches by 20 feet. The boilers were built by Brownell & Co., Dayton, Ohio. These are set two in a battery, each battery having an individual stack

45 inches by 80 feet high. The steam lines have extra heavy valves, flanges and fittings throughout, furnished by the American Foundry & Construction Company, Pittsburgh, Pa.

The blowing engine house is of brick, 39 feet wide inside and 82 feet long, with wood truss roof covered with No. 22 galvanized corrugated iron. There are three simple blowing engines, built by the William Tod Company, Youngstown, Ohio, having 46-inch steam ends, 84-inch air tubs and 60-inch stroke, with piston steam valves and mechanical inlet and outlet air valves. They are served by an overhead hand operated traveling crane of 12 tons capacity, built by the Reading Hoist & Crane Works, Reading, Pa. The exhaust from the engines goes to two 1000 horse-power Cochrane heaters for heating boiler water. The engines are supplied with individual 12-inch Cochrane separators.

The pump house contains two Laidlaw-Dunn-Gordon water works pumps of 5,000,000 gallons capacity each, a 20-inch suction line bringing water to these from the creek near by. The pump house also contains pumps for domestic water supply, conveyed through an independent 6-inch suction line from a 200,000-gallon spring. The main pumps discharge into a steel stand pipe 20 feet by 80 feet high. There are also two boiler feed pumps for hot water, each of 3000 horse-power capacity.

The entire steel plate work of the furnace, stoves, mains, draft stack, stand pipe and boiler stacks was furnished and erected by the Walsh & Weldner Boiler Company, Chattanooga, Tenn., and the iron castings for the entire plant were furnished principally by the Bessemer Foundry & Machine Company, Bessemer, Ala., and the Casey & Hedges Mfg. Company, Chattanooga, Tenn.

There are some 200 tenement houses of two, three and four rooms, also two hotels for whites and one for negroes. A few of these houses are located on top of the mountain, but most of them are in the valley. There are also a two-story school building and church, a large store, stables, supply house, office, &c., all located in the valley.

Chicago's Engineering Requirements.—The city of Chicago will soon advertise for bids on two lift bridges of the special type designed by City Engineer John Ericson. One of these bridges, for Archer avenue, will call for about 500 tons of steel, and another, at North avenue, about 600 tons. Three new pumps for water works pumping stations will also be required, for which competition will be opened to the trade at large. The pump for the Central Park station and one for the Springfield avenue station will each be 40,000,000 gallons capacity, while a 20,000,000-gallon pump will be required at the Sixty-eighth street station. Specifications are also being prepared for a boiler plant at the Lake View water works, calling for four 225 horse-power boilers. The boiler contract will probably not be let for two months. Boilers in most of the pumping stations are of the internally fired type, with corrugated furnaces.

Trackless Trolleys Refused Incorporation in Pennsylvania.—Attorney General Carson of Pennsylvania has advised Governor Pennypacker not to issue a charter to the Sayre Trackless Trolley Company, the purpose of which is to operate trackless trolley cars in Bradford County. Mr. Carson says that there is no law to authorize the chartering of such a corporation, and it would not come under the various laws governing street railways. Mr. Carson says: "All existing companies are subject to restraint. This proposed new company would be without restraint. No statute applies to it. It is not a railway nor a railroad, nor an omnibus line. If it were attempted to subject it to restraint of existing statutes, it might be found that no statute could be judiciously stretched to cover it, hence a gigantic creature of the State's creation had risen to roam at will, uncontrollable because beyond the reach of the law."

O. H. Schultz has been appointed auditor of the Alabama Consolidated Coal & Iron Company, Birmingham, Ala., to succeed G. M. Bowers, resigned. H. Hammond has been appointed assistant to President T. G. Bush.

The Iron Age.

New York, Thursday, August 4, 1904.

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Labor Leaders Coercing Candidates.

With charming candor, the American Federation of Labor announces a plan which it has devised for the election of Congressmen and members of State legislatures favorable to legislation in the interest of organized labor. Committees from labor organizations in each Congressional district are to submit the following questions to the candidates:

Will you vote against government by injunction by voting for our bill on that subject?

Will you vote for our eight-hour bill?

Will you vote for the people's sovereignty by voting to establish in the people a right to a direct vote on public questions?

The candidate will be expected to answer definitely, either "yes" or "no," and a refusal to reply in ten days is to be construed as a plain negative and treated accordingly. If he does not "come out for the people squarely, openly, in writing, signed by himself," the labor organizations are to give the facts the widest possible publicity in the district of the candidate, and their influence is to be used against his election. In this way the officers of the Federation hope both to gain strength in Congress and to attain greater promise of success in general labor legislation.

This plan of campaign has evidently been prompted by the failure of the labor leaders to force the anti-injunction and eight-hour bills through Congress. Their efforts in that direction have been frustrated by the strength of the arguments and the array of facts presented in opposition. Hereafter they do not propose to wait until Congressmen are elected and then try to influence them to support labor bills, but they will endeavor to secure a majority pledged in advance.

If this can be accomplished, the investigation of the eight-hour question about to be made by the Department of Commerce and Labor would be of no consequence. With a Congress pledged to pass an eight-hour law, a report favorable to an eight-hour day would, of course, not be needed while an unfavorable report would not be given even respectful consideration. Clearly, the American Federation of Labor is either not disposed to attach much importance to the Department's investigation or it fears that the result will not be such as to help the eight-hour cause.

The announcement of this plan of campaign is another indication of the lack of sagacity in labor leaders of which we have had so many striking examples in the past few years. It is simply another attempt to accomplish by force or duress that which the community has steadfastly refused to grant. The principle which actuates such a plan of procedure is precisely the same as the conception of sympathetic strikes to influence an impatient public against a hard headed employer or any of the other means employed to stir up wholesale trouble whenever a strike occurs that seems likely to fail. Candidates for office are to be threatened with defeat unless they yield to the dictates of those who assume to know the proper number of hours which should constitute a day's work, and who would also break down judicial obstacles to lawlessness in times of strikes. Some candidates will, of course, be found who will cheerfully say

"yes" to all these questions and stand ready to give the same answer to more, especially if they are seeking office in a district in which labor organizations are strong. They are of the class who would do anything to secure votes. But organized labor is not strong everywhere, nor are all candidates for office ready to make pledges, even in labor districts. The labor leaders may find that the great majority will resent this attempt to interfere with their independence of action on nonpolitical questions. Everything is risked in such an attempt on the candidates. If this effort to secure pledges fails, the eight-hour and anti-injunction agitation will be pretty thoroughly put to sleep.

Our Blast Furnace Statistics.

For a considerable period *The Iron Age* has published a monthly estimate of the actual production of pig iron in the United States, usually printing the figures between the 9th and 15th of the succeeding month. With only two exceptions—and they are small producers, one of them having been idle for some time—the furnace companies send us their figures. Sometimes the returns do not reach us quite in time, and occasionally a month is missing. But that the reports are substantially accurate is proved by the fact that they agree very closely with the complete reports compiled by the American Iron and Steel Association. Our total for the first six months of the current year was 7,956,392 tons, as compared with 7,960,082 tons reported by Mr. Swank—a difference of less than 4000 tons. Mr. Swank classifies the producing sections in a manner somewhat different from our own, so that the details cannot always be compared directly. We find, however, that Mr. Swank's total for Allegheny County is 2,142,570 tons, as compared with our 2,144,514 tons for the Pittsburgh district. For Illinois, Wisconsin, Colorado, Michigan and Missouri the figures are 946,613 tons and 946,591 tons, respectively; for New York, 231,223 tons and 232,609 tons; for New Jersey, 122,372 tons and 122,282 tons, and for the Lehigh Valley, 231,427 tons and 232,074 tons, respectively.

The value of the figures compiled by *The Iron Age* lies in the fact that they furnish a clear view of the frequent fluctuations in output, which semiannual statistics do not reveal. This has been particularly striking during the past year, with its drop to 846,695 tons in the production of coke and anthracite pig iron in December, a recovery to 1,555,267 tons in April, and a downward movement, now in progress, which had led to a decline to 1,292,030 tons in June—the latest return yet available. We may add, with a gratification which may be pardoned, that there is no department in the iron trade in this country or abroad which is served with such accuracy, from a statistical point of view, in so prompt a manner.

American inventors have an equal chance with citizens of other countries at a prize of 6000 francs, offered by the "Association des Industriels de France contre les Accidents du Travail," now organizing to hold a congress in June, 1905, with the object of investigating apparatus which will insure the greater safety of workmen employed on high tension electric conductors. The prize will go to the apparatus that will best indicate safely and clearly whether an electric conductor is alive or not. It must be equally applicable to direct and alternating currents of all voltages and must be reliable and incapable of doing damage to itself, the operator or the distribution system under any circumstances. The problem presented to the electrical inventor is a stiff one, and the man who

will produce such an apparatus meeting all the prescribed conditions will have earned the 6000 francs. But his success will mean a very great boon to those men whose work brings them into close proximity to high potential electric wires and machinery. Now that a current of 60,000 volts has become practicable and is much employed for long distance transmission, this enormous potential being coupled with large quantities of the electric fluid, the danger to the electrician and to workmen who must be employed in caring for such a line and for the apparatus at its ends has become a very serious matter. Danger through carelessness cannot be remedied by any apparatus, perhaps, but such a device as that proposed by the French congress would give timely warning which would save many lives.

The Connecticut Labor Bureau.

The State of Connecticut has tried the experiment of conducting a free employment bureau in the larger cities at the public expense, and the results, now sufficiently demonstrated to permit of intelligent deductions, would seem to indicate that the system is a success. The employment bureaus were established in 1901 by act of the General Assembly, under which it was provided that the Commissioner of the Bureau of Labor Statistics should establish in New Haven, Hartford, Bridgeport, Norwich and Waterbury free employment bureaus for the purpose of receiving applications from persons seeking employment and from persons seeking to employ labor. No fee may be charged either class of applicants. Some idea of the work of the bureaus may be obtained from the report of the year 1903, during which there were, in the five bureaus, 13,208 applications for employment, of which more than 7000 were from females; 10,728 applications for help, of which 7400 were for females, and situations were secured for 8180 persons, of whom over 5100 were females. Very much the same percentages prevailed during the 29 months of the life of the bureaus prior to the period covered by the report. The growth of the work has been material, in both kinds of applications and in the number of positions provided.

These bureaus have a very broad scope in the classes of help affected. No kind of employment is barred. Doubtless a very considerable percentage of applications came from servants, and an equally large number of situations procured were for this class of help. Yet of the persons for whom work was found, at the average rate of 150 a week, a large number went to manufacturing establishments, which, in Connecticut, means to a large extent metal working establishments. Thus a good work was done for both employer and employee in much the same manner that labor bureaus conducted in a number of American cities by metal trades associations and other similar organizations have done a greater work in the manufacturing field—greater because they specialize and most of them on strictly metal lines.

In the city of Bridgeport both classes of bureaus are in operation. That of the Manufacturers' Association has been freely used by workmen during the six months it has been in operation. Yet the Commissioner of the Bureau of Labor Statistics asserts that his Bridgeport Bureau has not been materially affected by the operation of the association's bureau. Undoubtedly men seeking employment use both bureaus, and as one specializes in manufacturing industries, though not in this instance exclusively in metal, the two would come in conflict, if at all, only in a portion of the great general field covered by the State institution. Whether an employment bureau conducted at the expense of the State is worth the while, in view of the great and constantly increasing de-

mands upon the public treasury for important and necessary improvements, is a problem for legislatures of other States to solve if the proposition is put to them. In Connecticut the statute puts an expense limit of \$2000 on each bureau, a total of \$10,000. Naturally, as the State as a whole pays the bill, only a small proportion of the taxpayers can receive the direct advantages of the institution. Nevertheless, it must be remembered that any means that assists the laborer to secure his hire or the employer to secure needed help at the earliest possible moment must be for the public good.

A Plan for Helping New Industries.

The Birmingham Commercial Club of Birmingham, Ala., has a plan for attracting new industries to the city which possesses features that will appeal to any one who has had experience in assisting manufacturing concerns to get a start as an adjunct of the industrial growth of a city or town. Ordinarily, building sites and exemption from taxes are demanded when a city is trying to get a new industrial resident, and sometimes these inducements are offered entirely unsolicited. Free water, free electric lighting and free this and that come under consideration. Such inducements are usually not businesslike nor wholesome in the life of a community. Exemption from taxation for one concern must mean added burdens to others. The results are generally undesirable. Occasionally there is an exception, but more frequently the manufacturing concern that requires so much assistance free of cost is not the kind that endures.

The Birmingham plan is on a strictly business basis. It is proposed to organize a corporation within the Commercial Club, with a capital of \$100,000 cash. This money will be loaned to small concerns that need financial assistance temporarily, until they have obtained a start. It may be that a new shop is needed or new machinery, or funds may be required for some other equally legitimate purpose. The corporation will loan the money, but with ample security by mortgage or other legally established claim. The advantage to the borrower will be that he will have the money for a longer time than a bank would carry him, even if the bank would take his paper, which would be doubtful, because his credit would not be established. But the Commercial Club corporation will not loan for indefinite periods. It will be a time loan, with provision, doubtless, for partial payments when desirable. The corporation will simply stand in the breach until the time comes that the new industry is on its feet financially.

The average city or town board of trade is an injury rather than an aid to the community it is intended to benefit, because its method is wrong. New industries are obtained generally in competition with other boards of trade. A very large percentage of those industries which will put themselves up to the highest bidder are short-lived. There are exceptions, as, for example, the Board of Trade of Bridgeport, Conn., which has procured a number of industries that have grown to large proportions. The trouble is it is difficult to get a board of trade to use the same businesslike methods that its individual members would use in their private business affairs. Where such an institution is on a genuine business basis it succeeds. Such instances as that at Hartford, Conn., where it is proposed to erect a modern industrial building of considerable size, for rent to small concerns, not at a profit, but with a view to attracting new manufacturing enterprises that are not large enough or not rich enough to build for themselves, and that of Birmingham are samples of proper methods of stimulating industrial growth.

June Iron and Steel Imports and Exports.

The June figures published by the Bureau of Statistics of the Department of Commerce and Labor show that our exports of iron and steel are continuing to grow, in accordance with the turn in affairs taken in our foreign trade within the past 12 months. The exports for June for which quantities are given amounted to 119,179 gross tons, against 26,311 tons in the corresponding month of last year. For comparison with preceding months the following figures are of interest: May, 107,646 tons; April, 75,747 tons; March, 89,332 tons; February, 57,558 tons; January, 49,880 tons. The total exports of the same commodities for the six months ending with June came very close to 500,000 tons, as compared with a trifle under 150,000 tons in the corresponding period of last year. The figures in detail for the month and six months are given in the following table:

Commodities.	Exports of Iron and Steel.		Exports of Iron and Steel.	
	June.		Six months.	
	1904.	1903.	1904.	1903.
Pig iron.....	2,659	1,653	21,713	7,457
Scrap	2,206	600	11,117	2,306
Bar iron.....	2,544	2,580	15,395	12,105
Wire rods.....	2,362	3,170	7,674	14,342
Steel bars.....	3,702	659	13,212	9,568
Billets, ingots, blooms, &c.	32,068	30	172,168	652
Hoop, band, scroll...	265	143	1,828	1,136
Iron rails.....	196	0	1,605	46
Steel rails.....	51,101	842	134,247	4,104
Iron sheets and plates	722	226	2,396	1,248
Steel sheets and plates	1,985	1,117	13,008	7,181
Tin plates andterne plates	542	2	3,493	162
Structural iron and steel	5,874	3,093	21,236	15,960
Wire	9,384	9,107	59,362	54,119
Cut nails.....	963	799	4,705	4,006
Wire nails.....	2,845	2,081	14,817	13,839
All other, including tacks	261	209	1,366	1,133
Totals.....	119,179	26,311	499,342	149,364

The total value of the exports of iron and steel and all manufactures thereof, not including ore, was \$10,507,097 in June, as compared with \$8,472,942 in June of last year. The total for the 12 months ending June 30 was \$111,948,586, as compared with \$96,642,467 for the previous fiscal year.

The imports of iron and steel for which quantities are given are running along at a fairly uniform rate from month to month. These imports in June amounted to 25,096 gross tons, against 25,781 tons in May, while the total for the six months amounted to slightly over 150,000 tons. The figures, however, show a very heavy falling off as compared with the corresponding month and six months of last year. The details for the two periods are set forth in the following table:

Commodities.	Imports of Iron and Steel.		Imports of Iron and Steel.	
	June.		Six months.	
	1904.	1903.	1904.	1903.
Pig iron.....	4,062	79,874	44,012	452,451
Scrap	2,358	17,634	8,580	62,887
Bar iron.....	2,699	4,239	10,014	22,640
Rails	6,808	11,026	30,448	72,644
Hoop, band and scroll	2	153	968	664
Billets, slabs, bars, &c.	637	30,503	6,583	176,231
Sheets and plates....	223	1,001	3,091	4,484
Tin plates andterne plates	6,674	3,871	34,328	25,479
Wire rods.....	1,697	1,964	8,087	10,404
Wire and articles made from	210	385	2,226	2,284
Structural iron and steel*	796	4,441
Chains	18	30	215	206
Anvils	2	10	84	84
Totals.....	25,096	150,699	153,077	830,458

* Included in "all other" prior to July 1, 1903.

Turning to the values of imports of all kinds of iron and steel, including manufactures thereof, but excluding ore, the value of the importations in June were less than half of the corresponding month of last year, the amounts being, respectively, \$2,030,798 and \$4,604,777. The total value for the 12 months ending with June was \$27,028,436, against \$51,615,312 for the previous fiscal year.

Pacific Coast Trade News.

SAN FRANCISCO, CAL., July 23, 1904.—The exchanges at the Clearing House continue to be in excess of those of last year for the same time, but nevertheless a quietude in business is generally noted; some call it dull. The truth seems to be that the Clearing House exchanges are swelled by the operations incident on the importation, and transfer East of Japanese yen. But for this the exchanges for the past couple of months would not have been as large as they were. It is now certain that, for some reason or other, the wheat crop of the State will be short, but the barley crop will make it up, so that we will have a pretty fair grain crop, notwithstanding—over 1,000,000 tons of wheat and barley. The shortage of fruit in some sections is made up by a heavy yield in others. Thus, California, as a whole, will do fairly well, and will have a good fall trade, though some particular sections will show a falling off. In the line of building hardware a very good trade will be done, quite equal to that of last year, for the contracts for new buildings recorded throughout the State show no abatement, and are at the present an average of about \$1,500,000 per month in San Francisco. The oil sections and the lumber sections, on the coast and in the interior, will have an especially good trade.

There has been a fair trade with the Hawaiian Islands and Alaska. Hawaii has taken large quantities of machinery and pipe, the latter for irrigation. The last steamer to Australia took a large quantity of machinery and bicycles, with a small quantity of other articles. The trade with China and Japan is likely to be cut off, as there are rumors afloat of Russian cruisers and torpedo boats near Honolulu for the purpose of holding up American vessels, the steamers of the Pacific Mail and the Occidental and Oriental companies particularly, to search for contraband of war. Among the latter, of course, will come flour and provisions, leather and almost every description of machinery, &c., which has been shipped for use by the Japanese army and navy, or in preparing supplies for them. The last two steamers, the "Korea" and the "Gaelic," have cleared within the past ten days with large quantities of these articles. Their total cargoes were valued at over \$800,000, without taking account of treasure, of which there was quite a considerable amount in the shape of Mexican dollars for the purchase of supplies by the Japanese in Manchuria. The "Korea" had, among other things, machinery valued at over \$50,000; bicycles, \$7000; railroad cars, \$38,000; bar steel, \$19,200; wire rope, \$1285, with other articles to the value of about \$2000—altogether a value in excess of \$115,000. The "Gaelic," which went out a few days later than the "Korea," had machinery valued at over \$15,000 and other articles, making altogether in this line about \$16,000. There was a very large quantity of machinery manifested for China, possibly for fear of consequences—a little over \$15,000, or \$31,000 in all for the steamer. This makes nearly \$150,000 of this class of goods for Japan principally—all shipped from the 12th to the 16th of July, inclusive.

There has been a fairly large import trade by rail for the supply of the fall business, although, on the whole, it has not been quite as large as last year. By sea there has been a moderate supply of iron and steel, &c. The "Durbridge," from Hamburg, had 14,402 bundles of iron and 30 packages of iron and steel. The Panama steamer brought about 12,350 packages of hardware, &c. The "Sixtus," from Antwerp, had 200 tons of cast iron and 135 iron plates. The "Glenard," from Dunkirk, had 355 tons of pig iron. Other vessels from these points made no special addition to our stock. J. O. L.

Experiments are to be made by the United States Navy Department with a new material for powder bags, known as smokeless powder cloth, a cellulose production, specimens of which have been ordered. This material is made in Germany. The chief objection to it would be the fact that the Department cannot be assured that the smokeless powder cloth is at all times up to the standard of the powder which would be put into it, and the combination of the gases of standard powder with those of defective powder cloth might prove disastrous.

Notes from Great Britain.

The Proposed British Iron and Steel Tariff.

LONDON, July 23, 1904.—The most interesting event in the iron and steel trades this week has been the issue by the Tariff Reform Commission of its report upon the iron and steel trades of Great Britain, together with recommendations as to an import tariff. This report is not an official, but a political, document. It would be a mistake, however, to underestimate its importance. In the first place, if the tariff reformers gain the upper hand within a reasonable period in the British Parliament, the tariff here suggested will undoubtedly become the basis of Parliamentary action, and, in the second place, the report in itself is exceedingly valuable, and well worthy of consideration, apart altogether from the political objects which brought it into being.

The volume consists of the report proper and of a long appendix, in which the evidence given has been dissected out under various headings, while in addition there are three memoranda: 1. On the recent developments in the United States iron and steel industry; 2. A summary of evidence before the United States Industrial Commission on the iron and steel industries, and 3, the organization and working of German kartels. There are statistical tables galore, no less than 53 of them, and six diagrams. It is thus evident that the volume as presented, apart from its political significance, is a compendium of information on the iron and steel industries, not only of Great Britain, but of America and Germany. The volume costs 60 cents, and may be obtained at the offices of the Tariff Commission, 7 Victoria street, Westminster, S. W., or through the publishers, P. S. King & Son, 2 and 4 Great Smith street, Westminster, London, S. W.

The Method of Inquiry.

The organization of the evidence presented in this report may be briefly explained. In the first place, all official memoranda were collected, and they are set forth in the volume in great detail. Next, forms of inquiry were distributed broadcast to all the manufacturers and leading merchants of the country. The answers were dissected, and those relating to the iron and steel trades were dealt with by a special committee, who acted under the guidance and with the knowledge of the parent commission. This report covers the iron and steel trades proper, but subsequent reports are to be issued on engineering, machinery, shipbuilding and the hardware, hollow ware and cutlery trades. No less than 458 returns were received from iron and steel manufacturers employing in the aggregate 230,986 persons. It is computed that there are 264,685 persons engaged in iron smelting, iron and steel founding and iron and steel mills, so that the returns dealt with by the commission represent over 80 per cent. of the entire trade.

Evidence was tendered by a number of representative iron and steel manufacturers, including such prominent men as Colonel Charles Allen, chairman of Sir Henry Bessemer & Co., Limited, and managing director of the Ebbw Vale Steel, Iron & Coal Company; Sir Alfred Hickman, M. P., and other well-known individual names. It must be premised that, with one or two exceptions, all those who gave evidence have already, in other ways, expressed their belief in the need for a change in our tariff system. This report is, therefore, based upon evidence which is avowedly *ex parte* and biased.

Experience of Manufacturers.

A section is devoted to the experience of manufacturers, and from it the commission states that there is a general consensus of opinion as to the severity and unfairness of foreign competition in our home market. The rapid substitution of foreign for British-made materials, the loss of foreign markets, chiefly through the operation of tariffs and the growth of foreign competition in the colonies. The report says:

"The methods of production, first established in the United Kingdom, have since 1870, in the ordinary course of economic development, which no power could check, extended to foreign countries, and these countries have made it the principal object of their policy to encourage national industries similar to those carried on here. Great areas, formerly divided by tariffs into many sep-

arate States, have been consolidated, and thus foreign manufacturers have obtained large and growing home markets, from which British products have been shut out by import duties, so high as to be practically prohibitive. In the British home market, their competition, commencing at the lower stages of production, has rapidly advanced until it is now practically coextensive with the iron and steel industry. By thus attacking our home market, which is open to them without let or hindrance, they have diminished the competitive power of British manufacturers to push their trade in neutral markets, and they are now threatening our position in British colonies."

Alleged Causes of the Relative Decline.

Another section is devoted to an inquiry into the alleged causes of the relative decline of the British iron and steel industry. It is submitted that we operate under natural disadvantages, mainly in connection with the supply of suitable ores. But the commission is of opinion that an adequate supply of ore of a suitable character is a question of organization and freights, and that in respect of distance, the United Kingdom is under no disadvantage as compared with her most serious competitors, whilst the coal supply is not inferior to that of any other country, in respect of quality or cost. Certain of the witnesses stated that, supposing a preferential system were established which stimulated the export of British manufactures to the colonies, it would be possible, by means of return freights, to cheapen and develop the supply of colonial ores, and that, in these circumstances, the United Kingdom would have an advantage over other countries.

In the matter of labor costs, it seemed to be the opinion of both witnesses and firms that, not only are the hours shorter in Great Britain than with its competitors, and wages higher (except in the case of the United States), but that the cost of labor per ton in existing conditions, is, on the whole, greater. But the difference of labor cost is not a new factor in the situation, nor does it account for the demoralization of the market which has marked recent years. Transport charges are declared to be more burdensome in Great Britain than in foreign countries, but, in the opinion of the witnesses examined, it is not transport charges alone which constitute the new element of danger, but the combination of the transport policy of foreign countries with their tariffs and export organization.

The Export Systems of Other Countries.

The next section brings us to more difficult ground. The importance of continuous running and the economy of large production are a source of perpetual interest, and the comparative advantages of Great Britain and foreign countries in this respect had to be faced by the commission. In this branch of the inquiry they had the advantage of the co-operation of numerous firms throughout the country, who confidentially tendered particulars with regard to the costs at their works. From this evidence the commission selects the following typical examples, which at once bring out the manner in which the saving is effected. The particulars here given will be of interest to American competitors:

Saving in Production of Steel from Pig Iron Due to Increased Output.

Week ending—	Tons. finished.	Wages per ton. £ s. d.	Fuel per ton. T. Cwt.
February —th.....	2,364	0 16 10½	2 0½
February —th.....	2,222	0 17 6½	2 0½
Average.....		0 17 2½	2 0½
March —th.....	3,093	0 14 8	1 10
April —th.....	3,105	0 14 2½	1 9½
Average.....		0 14 5½	1 9½
Thus the saving due to increased output was		0 2 9½	0 10½
Add 10% cwt. fuel at 4s.....		0 2 2	
Add stores and general charges.....		0 1 0	
We obtain total saving of.....		0 5 11½ per ton.	

Thus the saving on the second period when the works were running nearly full time as compared with the first period, when they were running about three-quarter time, was almost 6 shillings a ton, or, in the case of this particular firm, about £45,000 a year. On this point the re-

port says: "Taking the various elements of costs, witnesses are of opinion that British manufacturers under equal conditions of free trade or tariff are under no serious disadvantages, and can produce as cheaply as their competitors in similar circumstances. Short time is, in their view, of infinitely greater importance in increasing the cost of production than all the other general causes which have been mentioned put together."

Dumping.

The next section is devoted to dumping, and is the most highly arguable of any hitherto dealt with. In the appendix will be found actual contracts and other documents which go to show the prevalence of dumping. A case described as typical is brought into the text of the report:

"A firm employing nearly 1500 hands, writing in February, states that the current price of basic pig iron in Germany was then 58 marks per ton. The lowest cost at which this could be converted into steel beams could not be less than 31 marks per ton. Yet these German joists, costing not less than 89 marks, were being offered, f.o.b. Antwerp, at 82½ marks per ton, less 2½ per cent. discount. The home price in Germany for beams, f.o.r. at works, was 105 marks. Similarly, the current price for pig iron at Pittsburgh was \$13 (54 shillings 1 pence); the cost of manufacturing these into billets could not have been less than \$6.50 (27 shillings 1 pence) per ton, making together 81 shillings 2 pence. Yet these were being delivered, c.i.f., any British port, at 75 shillings per ton, making a difference of 6 shillings 2 pence per ton, exclusive of sea freight and land freight from Pittsburgh to the American port. The home prices for these billets at Pittsburgh was \$24 (100 shillings)."

Under "dumping," such subjects are dealt with as the state of employment, the loss of wages, the deterioration of labor, profits, security of capital, and so forth. The effect of dumping on general trade conditions, together with the conclusion, are thus stated in the report:

"With the evidence before us relating to other industries directly or indirectly connected with iron and steel, we find no advantages which, in any real sense, compensate for the disadvantages from which the iron and steel industry suffers through dumping. On the contrary, if we may judge from the replies to our inquiry forms and other communications which have reached us, manufacturers are alive to the danger of depending, in any way, upon dumped products. . . . When the foreigners have captured the trade, they fear that prices will be raised, and that they will be seriously handicapped in both the home and neutral markets. That this anticipation is well grounded is shown by the fact, stated by witnesses, that, after practically destroying the wire nail industry of this country, Germany and United States manufacturers have agreed on a price, at which wire nails should be sold here, of 15 shillings per ton above the price at which they are sold to any other country. When any branch of manufacture has been destroyed, it is extremely difficult to re-establish it."

The Proposed Remedy.

The *ipsissima verba* in the report on the proposed remedy may be given in some detail, but space precludes its being set out completely. The following paragraphs, however, speak the mind of the commission:

We are of opinion that the situation with regard to the iron and steel trades described in the foregoing report can be dealt with only by the combination of three principles in the arrangement of the British tariff. We think there should be three grades of tariff—viz., the general tariff, the preferential tariff, and the maximum tariff.

We are of opinion that a general tariff consisting of a low scale of duties is necessary, the object of which should be the increase of employment and the maintenance of fair conditions of competition with countries which grant reciprocal treatment to the United Kingdom.

With a view to securing freer trade within the empire, the general tariff should be subject to modifications in the case of the colonies. We find in the replies to our inquiry forms, and in the evidence of witnesses, a strong and widespread appreciation of the benefits derived from the preferential tariffs of the colonies.

A maximum tariff, consisting of comparatively higher duties than those of the general tariff, will be necessary in the case of countries which shut out our goods by practically prohibitive duties and refuse to negotiate on the basis of fair and reciprocal treatment.

Finally comes the provisional scale, which, at the moment, is concerned only with the iron and steel industry, and does not refer to the engineering, machinery, ship-building, hardware, hollow ware and cutlery trades:

Description.	Duties.
Iron ore.....	Free.
Pig iron.....	5 per cent.
Iron and steel: Puddled bars, ingots, blooms, billets, slabs, sheet bars, tin plate bars or similar partly manufactured materials. Rails, sleepers and fish plates. Girders, joists and beams. Bars, round, square, flat, and sections other than above enumerated. Silt rods.....	6¼ per cent.
Wire rods, plates.....	7½ per cent.
Sheets.....	10 per cent.
Nails, screws and rivets. Bolts and nuts. Tires and axles. Railway wheels and axles. Crucible steel, and manufactures of iron and steel unenumerated.....	Not to exceed 10 per cent.

In some respects the report and proposed tariff are less interesting than the appendix. It would be easy to fill many pages of *The Iron Age* with material of real business interest to American exporters. One of the most interesting points refers to the class of imports in the iron and steel trades which compete with British makers. The items are taken from answers written on the forms of inquiry, and the list is a portentous one, covering a great variety of iron and steel products, machinery, &c.

The report as a whole will undoubtedly create much discussion over here in trade circles for some time to come. In the circumstances, it is a pity that one or two of the salient objections to the proposed tariff have not been dealt with. For example, considerable attention is given in the dumping section to the subject of unemployment, but no attempt is made to deal in a large manner with the relative statistics of unemployment in other countries. Then, again, in regard to dumping: The figures quoted, which seem to indicate large profits made out of dumping by the German kartels, are eagerly accepted as accurate. Apart from the highly intricate figures quoted, there is considerable evidence pointing to the fact that dumping is by no means the paying game it is assumed to be. And lastly, there is grim humor in the plain fact that the only two witnesses whose evidence is given *in extenso* and whose names are disclosed are strongly antiprotectionist.

S. G. H.

Census of the Graphite Industry.

WASHINGTON, D. C., August 2, 1904.—An increase of nearly 300 per cent. in the production of graphite in the past decade is shown by the census report upon this industry, just completed by the Census Bureau. Although the production of graphite has had a very important bearing upon the development of several of the metallic industries in the United States, and especially upon the manufacture of crucible steel, it was not until 1880 that authentic statistics of production were collected. The following table shows the comparative results of the mining operations for 1880, 1889 and 1902:

	1902.	1889.	1880.
Quantity, short tons.....	27,438	7,003	940
Value	\$227,508	\$72,662	\$49,800

The States reporting production in 1880 were New York, North Carolina and Pennsylvania. Since the quantities of graphite which have been exported from the United States are so small as to be negligible in this connection, the total consumption of graphite in this country may be assumed as equivalent to the production plus the importation. As above stated, the production in 1902 was 27,438 short tons. The imports for the same year amounted to 20,021 tons, all of which was received in an unmanufactured condition. As showing the increase in imports, as well as in domestic production, it should be said that the receipts of foreign graphite for 1889, the year covered by the eleventh census, aggregated 9755 short tons. During the past decade the domestic output of high grade crystalline graphite has been obtained chiefly from the mines near Ticonderoga, Essex County, N. Y. The mines in Chester County, Pa., were reopened in 1897 after a long period of inactivity, and have been in continuous operation since that time.

W. L. C.

The Production of Coal in 1903.

WASHINGTON, D. C., August 2, 1904.—The forthcoming report on the production of coal in 1903, which has practically been completed by E. W. Parker for the United States Geological Survey, will show that the total output of the coal mines of the country during the year amounted to 359,421,311 short tons, thereby exceeding all previous records. This is an increase of 57,830,872 short tons, or 19 per cent. over the production of 1902, which amounted to 301,590,439 tons. The production of 1903 was nearly double that of 1893, and more than three times the output of 1883. The increase of production in 1903 over 1902 was equal to the total production of all kinds of coal in 1878, only 25 years ago.

Output by States

The following table shows the quantity and value of the output for 1903 and the increase in tonnage over the production of 1902:

State.	Total product.	Total value.	Tonnage increase.
Alabama	11,832,124	\$14,374,746	1,477,554
Arkansas	2,283,593	3,372,536	349,661
California and Alaska...	105,620	306,118	18,424
Colorado	7,639,268	9,109,810	*32,075
Georgia and No. Carolina	434,260	546,759	*2,823
Idaho	4,250	13,250	2,220
Illinois	37,206,667	43,559,691	4,267,294
Indiana	10,905,842	13,367,859	1,458,419
Indian Territory.....	3,517,388	6,386,463	696,722
Iowa	6,852,686	11,304,638	947,920
Kansas	5,867,208	8,930,271	601,143
Kentucky	7,431,016	7,877,332	664,032
Maryland	4,783,083	7,084,453	*488,516
Michigan	1,410,909	2,787,742	446,191
Missouri	4,303,332	6,913,444	413,178
Montana	1,505,576	2,472,823	*55,247
New Mexico	1,543,466	2,105,685	494,703
North Dakota	301,105	456,315	74,594
Ohio	25,004,893	32,195,275	1,484,999
Oregon	91,144	221,081	25,496
Pennsylvania	103,271,057	121,832,539	4,696,690
Tennessee	4,797,846	5,978,555	414,378
Texas	926,759	1,505,383	24,847
Utah	1,681,409	2,026,088	106,883
Virginia	3,511,307	3,365,149	328,314
Washington	3,196,273	5,384,939	515,059
West Virginia.....	30,250,408	34,758,490	5,679,582
Wyoming	4,709,393	5,916,951	279,902
Total bituminous.....	285,107,392	\$354,154,285	24,890,548
Pennsylvania anthracite..	74,313,919	152,036,448	32,940,324
Grand total.....	359,421,311	\$506,190,733	57,830,872

* Decrease.

Great Increase in Value.

Large and significant as was the increase in the amount of coal produced, the increase in the value of the product was still more noticeable. The value of the coal product at the mines in 1903 amounted to \$506,190,733, which, compared with the value of the output in 1902, placed at \$367,032,069, shows an increase of \$139,158,664, or nearly 38 per cent. The percentage of increase in value was almost exactly double that of the increase in production—a significant fact that social scientists may interpret as they please.

Of the total production in 1903 74,313,919 short tons (66,351,713 long tons), represent Pennsylvania anthracite, valued at \$152,036,448. This is in contrast to the production of 1902, when the output was curtailed by the prolonged strike in the anthracite regions and reached only 41,373,596 short tons (36,940,710 long tons), valued at \$76,173,586. The increase in anthracite production in 1903 over the production of the previous year was 32,940,324 short tons (29,411,003 long tons), or nearly 80 per cent. in quantity, and \$75,862,862 or nearly 100 per cent. in value. The production of bituminous coal (which includes lignite, or brown coal, semianthracite, semibituminous and cannel coal, and scattering lots of anthracite) amounted to 285,107,392 short tons, valued at \$354,154,285, which, as compared with 1902 when the production was 260,216,844 short tons, valued at \$290,858,483, shows an increase of 24,890,548 short tons or a little over 9 per cent. in quantity and of \$63,295,802, or a little less than 22 per cent. in value.

From this it appears that 57 per cent. of the total increase in production, and 54 per cent. of the increase in value was due to the return of normal conditions in

the anthracite fields of Pennsylvania. The average price for a ton of bituminous coal, which is obtained by dividing the total value by the total product, was \$1.24 for a short ton in 1903 and \$1.12 in 1902. The average price of a ton of anthracite coal was \$2.05 in 1903, as against \$1.84 in 1902.

W. L. C.

German Shipbuilding Profits.

Shareholders in German shipyards have had little to complain of in their individual cash benefits from the past year's business. American investors in this class of industrials may well feel a little envious as they compare their own incomes from this source with those of their German brethren. For instance, the Vulcan Company, Stettin, paid a dividend of 14 per cent.; the J. C. Tecklenborg Shipbuilding Company, Bremerhaven, 12 per cent.; the G. Seebeck Shipbuilding & Machine Works Company, 10 per cent.; the Blohm & Voss Company, Hamburg, 9 per cent., and the Rickmers Company, Bremen, 7 per cent. In each of these instances the dividend was the same as that of the preceding year. Even where the dividends showed a decline, the stockholders have little cause to complain, from the viewpoint of Americans who will make invidious comparison. The Flensburg Shipbuilding Company showed a decline from 18 to 14 per cent.; the Reiherstieg Shipbuilding & Machine Works Company, Hamburg, from 13 to 10 per cent., and the Neptune Shipyard & Machine Works Company, Rostock, from 9 to 8 per cent.

In two instances the German companies showed a loss. The Bremer Vulcan Shipbuilding & Machine Works Company, Vegesack, suffered severe loss because of the necessity of writing off the books the shares of the Vulcan Belge of Hoboken and Antwerp, but this was not because of the decadence of its shipbuilding prosperity, and the present year will show a profit, it is said. The Howaldt Works Company, Kiel, did not pay a dividend, the available surplus having been transferred to a guarantee fund to provide for unforeseen loss on a cruiser.

The gross tonnage of new shipbuilding showed a smaller gain than usual, which is accounted for to a great extent by the fact that fewer merchant ships and no war ships are being built on orders from other nations. It must be taken into consideration, however, in reviewing the prosperity of these shipbuilding concerns, that most of them have other lines of manufacture, such as general machinery and locomotives, in addition to ship construction.

The Engineers' Club of St. Louis has compiled an instructive World's Fair souvenir for the benefit of its members and the profession generally who are visiting or contemplate visiting the fair. It is an attractive book, 6 x 9 inches in size, bound in heavy paper covers, and containing some 150 pages, divided into four parts. Division I, the World's Fair section, gives a history of its conception, something about its site and general features, a ground plan and panoramic view, how the Exposition was financed and engineering data covering roads, water supply, fire protection, drainage, lagoons and lakes, sewerage, garbage plant and details concerning exhibits of engineering interest as found in the Liberal Arts, Mines, Electricity, Transportation and Machinery buildings. A diagram of each building locates the exhibits by section numbers. Division II is an engineering guide to St. Louis and vicinity, and is divided into sections on civil, mining, mechanical and electrical engineering and general. The objects of interest to each class are treated separately, giving the most important information in concise form. Division III, local engineering data for St. Louis and vicinity, includes geodetic and astronomical data, city directrix and topography, climate, information about the Mississippi River with gauge charts, analyses, &c., mineralogical data and engineering tests. Division IV is the ninth annual bulletin of the Engineers' Club of St. Louis, giving officers and committees, reports, the constitution and articles of association and list of members. All in all, the work is one of great value, as it has been prepared with exceptional care, and it should certainly be procured by all those entitled to it.

MANUFACTURING.

Iron and Steel.

Our attention has been called by the N. & G. Taylor Company, Philadelphia, Pa., to an item appearing in these columns in the issue of July 21, in which the statement was made that it had been operating only five of the eight tin mills at its plant at Cumberland, Md. The company advises us that this statement is not in accordance with the facts, the plant in question having been run full.

The pipe mills of the Susquehanna Iron & Steel Company, Columbia, Pa., are being successfully operated under the direction of a receiver. This week, in addition to the regular shipments, a shipment of five cars was made to one consignee.

Blast Furnace No. 3 of the Pennsylvania Steel Company, at North Lebanon, Pa., has been put in blast after an idleness of several months. Only two furnaces are now being operated at North Lebanon.

The Interstate Steel Company, manufacturer of the Racel carbonized steel, Rockford, Ill., has applied for license to incorporate, the capital stock named being \$65,000. The incorporators are H. C. Shattuck, A. R. Morgan and C. W. White. The company is erecting a building and expects to be ready to turn out goods early in August. All machinery requirements have been satisfied.

The John Roebling's Sons Company, Trenton, N. J., has purchased about 200 acres of land between Kinross and Florence, N. J. The property lies between the tracks of the Amboy Division of the Pennsylvania Railroad and the Delaware River. There is a frontage of a mile on the river, with 20 feet of water for one-quarter of this distance. The company will erect a rod rolling mill this fall and winter, and subsequently will remove a rod mill in Trenton to the new location. Next year other extensions will be considered.

The Pennsylvania Steel Company has commenced the erection, at North Lebanon, Pa., of an electrical ore concentrating plant. The plant will cost about \$300,000 and will have a daily capacity of 600 tons of iron.

The Crane Company, Chicago, has increased its capital stock from \$7,000,000 to \$10,000,000. No changes in officers or business policy accompany the increase in capitalization.

At the annual meeting of the stockholders of the Youngstown Iron Sheet & Tube Company, held in Youngstown, Ohio, last week, James A. Campbell, who has been general manager since its organization, was elected president; H. G. Dalton of Cleveland, vice-president; Richard Garlick, treasurer, and George E. Day, secretary and general sales agent. S. V. Huber & Co. of Pittsburgh, who are consulting engineers for the company, are drawing plans for the building of a 16-inch tube mill. The building of this new mill has not been authorized as yet, but will be taken up by the directors in the near future. At the present time the company is making wrought iron pipe up to 8 inches in diameter, and also making double refined puddled iron sheets and steel sheets, both black and galvanized. The report of operations of the company for the past year was very satisfactory to the stockholders.

Among the companies that have recently signed the Amalgamated Association scales of wages are the following: Ewald Iron Company, Louisville, Ky.; American Rolling Mill Company, Middletown, Ohio; Westerman & Co., Lockport, N. Y.; Sligo Iron & Steel Company, Connellsville, Pa.; Niles Iron & Sheet Company, Niles, Ohio; Empire Iron & Steel Company, Niles, Ohio; Whittaker-Glessner Company of Wheeling, W. Va., and Martins Ferry, Ohio, and Independent Rolling Mill Company, Cuyahoga Falls, Ohio.

Charlotte Furnace of Corrigan, McKinney & Co., Scottdale, Pa., is making some excellent records in production. In 30 days recently this stack turned out 6636 tons of pig iron, which is a very creditable record when it is considered that the stack is only 16 x 65 feet in size.

Nearly all the hot mills in the Shenango and New Castle works of the American Sheet & Tin Plate Company, New Castle, Pa., are again in operation. The Shenango works has 30 hot mills and the New Castle works 24 hot mills. These two plants shut down about July 1 for repairs and stock taking.

Marcus Ruthenberg and capital he has interested have commenced the installation of machinery in an old stone house on the lands of the Niagara Falls Power Company, Niagara Falls, N. Y., and will engage in the commercial reduction of iron by electricity. At the start they will use 1200 horse-power. The initial plant is located adjoining the plant of the International Acheson Graphite Company. Mr. Ruthenberg did extended experimental work in Lockport, and if the Niagara venture proves a success it is expected that larger works will be established there.

The Emlyn Iron Works, Chicago, whose plant is at East Chicago, Ind., has been sold to John R. Walsh, president of the Chicago National Bank, for \$150,000. Mr. Walsh bought the mill in order to protect the interests of his bank, which was a large creditor of the company. It will be remembered that the Emlyn Iron Works went into voluntary liquidation in the spring and that the only creditors of the company were stockholders and the Chicago National Bank. The firm of S.

Morris & Co., scrap iron, was a major factor among the stockholders. The plant was erected and went into operation just four years ago. It has seven double and three single puddling furnaces, five heating furnaces, and one each of 8, 9, 16 and 18 inch roll trains. Its annual capacity is rated at 40,000 gross tons of iron or steel bars. It will be put in condition for operation immediately and will take its old position as an important element in the Chicago bar iron market.

The two Shoenberger blast furnaces and the Bessemer steel plant of the American Steel & Wire Company, Pittsburgh, which have been shut down for about a month, will start up in the next few days, probably on Monday, August 8.

The Hyde Park sheet mills of the American Sheet & Tin Plate Company, Hyde Park, Pa., which have been closed for nearly two months, started up August 2. This plant belongs to the Vandergrift unit.

The 33-inch mill and six open hearth furnaces at the Homestead Steel Works of the Carnegie Steel Company were shut down last week. It is stated, however, that the shut down is only for repairs and that the idle departments will be started just as soon as these repairs have been finished.

The Anderson-Dupuy Works of the Crucible Steel Company of America, McKees Rocks, Pittsburgh, are being started up this week after some months of idleness.

Of the 50 hot mills in the Shenango and New Castle works of the American Sheet & Tin Plate Company, New Castle, Pa., 20 are in operation and the remaining 30 will probably be started in a short time.

The Solid Steel Tool & Forge Company, Farmers' Bank Building, Pittsburgh, with works at Tarentum, Pa., has elected the following Board of Directors: H. U. Armstrong, H. M. Breckenridge, J. D. Wilson, J. W. Hemphill, Reuben Miller, Jr., and A. A. Hicks. No dividend was declared, but the surplus earnings were passed into the profit and loss account. About \$150,000 was spent for building additions during the year.

The Ohio works of the Carnegie Steel Company, Youngstown, Ohio, were closed last week for inventory and necessary repairs. The plant is again in operation this week and in addition blast furnace No. 3, which is an entirely new stack, has been started. Stacks Nos. 1 and 2 are also in operation, while stack No. 4 is not yet completed.

The blast furnace of the Salem Iron Company, Leetonia, Ohio, for which McKeefrey & Co., Pittsburgh, are selling agents, has been blown out and will be practically rebuilt. The contract for the iron work has been given to the Enterprise Boiler Company, Youngstown.

Atlantic furnace of the Republic Iron & Steel Company, New Castle, Pa., has been blown out. The Republic Company has two furnaces in the Shenango Valley and two in the Mahoning Valley, only one of which is in operation.

On August 1, after its annual shutdown, the Joliet Works of the Illinois Steel Company resumed operations in all departments excepting rod mill No. 2, which will be started August 8.

General Machinery.

The Aurora Automatic Machinery Company, Aurora, Ill., has increased its capital stock from \$100,000 to \$250,000, the object being to extend its line of manufacture. The company makes motors, hubs, coaster brakes, pneumatic tools and appliances. As yet no formal announcement has been made to the trade as to what new machinery will be added to its line nor what additional shop equipment will be purchased.

The Crompton & Thayer Loom Works, Worcester, Mass., has awarded the contract for an addition to its shops. The new building will be of brick, 50 x 200 feet.

The Schutte & Koerting Company, machinery manufacturer, Philadelphia, has purchased the property at 1245-49 North Twelfth street, adjoining its plant, and will erect an addition to the factory upon the premises. The new plant will be about 80 x 85 feet.

The Trinity & Brazos Valley Railway Company has let contracts for shop buildings at Cleburne, Texas. There will be a machine shop, 100 x 140 feet; an engine house, 36 x 140 feet, and a blacksmith shop, 24 x 40 feet. The engine house will have a capacity of eight locomotives. R. H. Baker, Austin, Texas, vice-president and general manager of the company, has charge of the placing of the contracts and states that machinery for the buildings contracted for has already been ordered purchased. Later, however, a boiler shop, coach and paint shop and car repairing sheds will be added.

Samuel Hunt, receiver for the Detroit Southern Railway Company, has sent a proposition to the Commercial Club of Springfield, Ohio, stating that he has been authorized by the courts to erect a new repair shop at a cost of \$60,000 and asking that the city donate 40 acres of ground as a site for the shops. The present shops at Springfield have an average monthly pay roll of \$12,000.

At the annual meeting of the Mahoning Foundry & Machine Company, Youngstown, Ohio, held last week, the following officers were elected: Charles R. Darrow, president and general manager; Mason Evans, vice-president; Frederick G. Evans, secretary and treasurer. The above named officers, together

with L. E. Cochran and G. M. McKelvey, comprise the Board of Directors. This company makes cast iron ladle linings for slag cars, blast furnace and rolling mill machinery and castings, bridge weights and chemical works castings.

The Buffalo General Electric Company, Buffalo, N. Y., has arranged to increase its capital stock from \$2,600,000 to \$5,000,000. The additional capital will be used for extending the company's facilities and for making improvements upon its plants, including an addition to the Wilkeson street plant.

The Superior Drill Company, Richmond, Ill., has received an order through Adolpho Mantels, Buenos Ayres, for 700 seeding machines for the Argentine Republic. The Parlin & Ovendorf Company has secured a contract through the same agency for 1500 riding plows for shipment to that country.

The Hendricks Mfg. Company, Waynesboro, Pa., has purchased from the Geiser Mfg. Company of the same place all of the fire damaged machinery of the Metcalfe Engine Plant, Quincy, Pa. The Hendricks Company will use the machinery in an enlargement of its plant in the near future.

Eighteen contractors will bid for the erection of car shops for the Philadelphia & Reading Railway Company, Newberry Junction, Pa. The building will be 108 x 303 feet, one story, with slag roof, and will contain in addition to other machinery an engine and boiler plant.

Contracts for the new pattern shop and blacksmith shop for the Olds Motor Works, Lansing, Mich., have been let. The pattern storage building is 70 x 85 feet and two stories high, and the blacksmith shop is 70 x 239 feet, one story, with trussed roof and lantern.

The Cleveland office of the Marshall & Huschart Machinery Company has experienced a decided improvement in the demand for machine tools during the past two or three weeks and looks for better demand from now on. It recently sold a 10-foot boring mill to the Weatherly Foundry & Machine Company, Weatherly, Pa.

The Cleveland, Painesville & Ashtabula Railway Company will erect a car house and repair shop near Geneva, Ohio, and will buy an equipment of machine tools. Mrs. M. A. Phillips, Electric Building, Cleveland, is purchasing agent for the company.

A company is being organized at Columbus, Ohio, by Gilbert H. Stewart, J. R. Smith, Dr. F. J. Jones and others to manufacture a trenching machine invented by J. H. Libbe. The machine digs from 100 to 120 feet of trench, 14 feet deep and 3 feet wide, in a day, and fills as it works, allowing time for tiling, piping or brick work. A factory will probably be erected at Columbus.

H. H. Hammond, trustee for the Eclipse Machine Company, Cleveland, is selling the equipment of the company's machine shop, including about 20 tools, practically new. Until recently the company has been manufacturing special machinery, automobile parts, &c.

The Alliance Machine Company, Alliance, Ohio, has ready for shipment to Mexico a large electric ladle crane and also a 150-ton consignment of mining machinery for South America. The latter is the first part of a large order for machinery which the company has received for shipment to South America.

Power Plant Equipment.

The David Bradley Mfg. Company, Bradley, Ill., has arranged to handle a full line of Waterloo gasoline engines made by the Waterloo Gasoline Engine Company, Waterloo, Iowa.

The Stirling Boiler Company, Barberton, Ohio, is installing a battery of four 250 horse-power boilers in the plant of the Andrews & Hitchcock Iron Company, Hubbard, Ohio, and will shortly install eight more similar boilers in the same plant to take the place of the present boilers, which will be razed.

The Prospect Boiler Company has been incorporated to take over the business of the Prospect Boiler Works at New Brunswick, N. J. George Wildman is the president of the new corporation. The company will operate the old works for the present, but is planning to erect a new shop next year. A specialty will be made of iron and steel boilers with heavy or single riveting and house heating boilers of the steel tubular type, with special casting. The erection of heavy smokestacks will be continued.

The Fishel Brewing Company, Cleveland, will place contracts in the near future for the power equipment of its new plant, which will include a 100 horse-power boiler, 100 horse-power engine and ice machine, a 50-kw. generator, and nine motors of various sizes.

The Newburg Brick Company, Cleveland, which is building a large brick plant at Newburg, will shortly close contracts for power equipment, including a 350 horse-power engine and two 150 horse-power boilers.

The Pierce-Crouch Engine Company, New Brighton, Pa., manufacturer of Brighton gas engines, has received orders for this type of engine from the following concerns: Press Prism Plate Glass Company, Morgantown, W. Va., 85 horse-power; Evans City Water Works, Evans City, Pa., 25 horse-power; Johnstown Water Works, Johnstown, Pa., 40 horse-power; Co-Operative Glass Company, Beaver Falls, 50 horse-power; Upper Sandusky Water Works, Upper Sandusky, Ohio, 50 horse-power.

The Central Power & Mfg. Company has been incorporated at Albany, N. Y., capitalized at \$10,000, to develop and transmit electric power, light and heat in the cities of Albany, Schenectady, Troy and Saratoga and other towns. The incorporators are Charles R. Huntley, vice-president and manager of the Buffalo General Electric Company; Wm. R. Huntley and Daniel T. Nash, all of Buffalo.

The Ridgway Dynamo & Engine Company, Ridgway, Pa., reports that June and July were the best months in the shipment of engines in the history of the company. Among the contracts in hand are several from the United States Government for direct connected engines and generators.

The city of Columbia, Mo., is about to take over the control of its municipal water and lighting systems, and extensive changes, repairs and extensions will necessitate the purchase of the following equipment and materials: Generators, deep well pumping machinery, low and high duty service pumps; belting, shafting, &c.; pipe and fittings; electrical supplies and machine shop equipment. W. H. Cook, 5 Missouri avenue, Columbus, Mo., would like to be put in touch with those interested in all these lines and also wishes to receive monthly stock lists of supplies pertaining to the water and lighting plants. Mr. Cook wishes to hear from companies sinking artesian wells, four of which will have to be sunk to a depth varying from 800 to 1000 feet.

Foundries.

The Illinois Foundry & Engineering Company, Granite City, Ill., has been organized to manufacture gray iron castings of every description and later will put in steel furnaces. Foundations are now being laid for a new plant, which it is expected will be in operation October 1. Orders for machinery equipment have practically all been placed. The officers of the company are as follows: President and general manager, E. M. Miller, Edwardsville, Ill.; secretary and treasurer, A. W. Price, Cleveland, Ohio; vice-president, A. J. Miller, St. Louis. The company has a capital stock of \$25,000.

The Adrian Steel Casting Company, Adrian, Mich., has been organized, with a capital stock of \$30,000. The officers are: President, Charles E. Sutton; vice-president, Dr. G. B. M. Seager; treasurer, E. N. Smith; secretary and general manager, W. N. Swift. Experiments have been conducted with a new process for making steel castings and the company claims to be satisfied with the results obtained. A site has been selected for a plant and plans are now being drawn for the buildings, of which there will be three—an office building, foundry and pattern vault.

The Malleable Iron & Chain Belt Company, West Allis, Wis., contemplates the enlargement of its works, but has not yet perfected its plans.

The old foundry of the York Safe & Lock Company, York, Pa., will be torn down and on its site will be erected a building 80 x 160 feet as an addition to the works.

The plant of the York Foundry & Machine Company, York, Pa., will be completed and in operation by September 1. Orders have been booked for October and November delivery. The building is of brick, 23 x 100 feet, and will be equipped for casting plain and fancy brass work for safes, vaults or other purposes. It will be complete with cupolas, core ovens, brass foundry and 10-ton electric cranes. Much of its product will be sold to the York Safe & Lock Company, the plant of which it adjoins.

The German-American Foundry Company has been incorporated to operate the foundry at Boonton, N. J., for many years conducted by the J. Couper Lord Estate and later by the New York Agricultural Company before it moved to Somerville, N. J. The officers of the new corporation are Henry Krueger, president; John Sharkey, vice-president; Oscar Rohland, treasurer; J. J. Cunningham, secretary and general manager. These gentlemen formed a co-partnership on November 1 of last year to operate the foundry, but the business increased so rapidly that it was deemed best to incorporate it. The business is manufacturing machinery castings, principally for rolling mills and blast furnaces.

The Chester Steel Casting Company, Philadelphia, announces that the recent fire at its plant was small and in no way curtailed the output. The fire was confined to one furnace and the building immediately over it. The plant was in full operation two days afterward.

The stockholders of the Cambria Foundry & Machine Company, Johnstown, Pa., will meet on September 12 to take action on a proposed increase of \$20,000 in the indebtedness of the company.

It is said that the American Steel Foundries has secured a contract for supplying steel castings for 5000 cars recently ordered by the Cincinnati, Hamilton & Dayton and Pere Marquette railroads.

The Logan Mfg. Company, Phoenixville, Pa., has made an assignment to Joseph R. Embury, Philadelphia, for the benefit of its creditors. The creditors will meet in the Trust Building, Philadelphia, August 9, to appoint an additional assignee or assignees. The Logan Company was organized about six years ago for the manufacture of steel castings by a new process and for a time prospered. After it had been in business about two

years the building was converted into a foundry for the manufacture of iron castings. This did not pay well and the plant has been idle for the past two months. The company is a limited corporation and ex-Congressman J. K. P. Hall is president.

Bridges and Buildings.

The Belmont Iron Company of Philadelphia, which is erecting a plant on an 11-acre site purchased at Eddystone, Pa., announces that it will not remove its entire business to that place. Only the heavy structural work will be done there, and the Philadelphia plant will be used for the manufacture of lighter ornamental work. The company will double its present force when its new buildings are ready. The new plant will consist of a main building, power house and an office.

The Harman-Cogger Company, Bloomsburg, Pa., received the contract for all the iron work to be used in the reconstruction of the Pennsylvania Paper Company plant at Catawissa, Pa. The Geo. M. Newhall Engineering Company, Limited, Philadelphia, is the engineer.

The Board of Public Service, Akron, Ohio, will receive bids until August 10 for the erection of a steel bridge over the canal at Falor street, that city, to cost about \$14,000.

Fires.

The machine shop, blacksmith shop and one pattern house of Barnes Bros.' Foundry, Lanesboro, Pa., were destroyed by fire on July 22.

The four buildings of the Ornamental Terra Cotta Works, owned by Conkling, Armstrong & Co., Philadelphia, were destroyed by fire July 31, with an estimated loss of \$150,000.

The works of the Lackawanna Fertilizer Company, Moosic, Pa., with the exception of one building, were destroyed by fire on July 28; loss \$15,000.

A fire in the planing mill and lumber yard district at Fresno, Cal., July 11, caused a heavy loss to a number of concerns operating planing mills and to the Valley Foundry & Machine Shops.

The foundry of the Locke Regulator Company, North Salem, Mass., was damaged to the extent of \$4000 July 28.

The car shops of the Duluth & Iron Range Railroad Company at Two Harbors, Minn., were destroyed by fire on July 26; loss \$75,000.

The Thomas Machine Shops, at Peoria, Ill., were seriously damaged by fire July 25.

The factory of the Rattan Mfg. Company, New Haven, Conn., was not so seriously damaged by the recent fire as was at first supposed. The engine was not destroyed. The company has contracted for complete repairs and for the articles destroyed by the fire.

Smith & Co.'s varnish works, Long Island City, N. Y., were damaged to the extent of \$50,000, August 1, by fire caused by lightning.

The plant of the Indianapolis Drop Forging Company, Indianapolis, Ind., was damaged by fire to the extent of \$60,000, July 18.

The Michigan Machine Company, Detroit, Mich., suffered a loss of \$3000 by fire, July 26.

H. Dixon's foundry, Collingwood, Ont., was destroyed by fire, July 27; loss \$8000.

The mill department of the American Rolling Mill, Middletown, Ohio, was damaged by fire July 30 to the extent of \$15,000.

The coal handling and storage plant at the United States Navy Yard, Portsmouth, N. H., was destroyed by fire July 28, together with 5000 tons of coal. The loss was \$125,000. The building was completed March 1, and had not been accepted by the Government, though the contractors had been paid.

Hardware.

A new company known as the Bloomington Bracket Company has been incorporated at Bloomington, Ill., to manufacture the Iseminger window bracket. D. H. Iseminger, the patentee of the bracket, has sold his patent and business to the new company, of which C. C. Bowman and P. G. Collins are incorporators. The Perfection bracket, as it will be called hereafter, is an adjustable platform to be used in washing windows on the outside. It is constructed of wood with steel braces.

The Lion Fence Company, Adrian, Mich., has been incorporated, the capital stock being \$150,000, all of which has been subscribed. George Avery, A. E. Morey and Fred Postal, all of Detroit, are the largest stockholders, while the Adrian stockholders are S. S. Withington, W. H. Shearson and Henry C. Bowen. The company will use a loom invented by Mr. Withington. A site for a plant has been selected.

M. Schrayner's Sons & Co., manufacturers and jobbers in tin, stamped and japanned tinware, Chicago, have purchased the corner lot at Eighteenth and Sangamon streets, on the Chicago, Burlington & Quincy Railroad, 80 x 195 feet in size, on which they will build a five-story brick warehouse and factory, 80 x 100 feet. Cars will be switched into the building and provision will be made for loading and unloading four cars at one time. The company will also erect a tinning and galvanizing house on the south end of the property, which will be 25 x 80 feet. It is expected that the new buildings will be completed ready for oc-

cupancy by January 1, 1905. The company intends increasing its line of tinware, making a full line of shallow and deep stamped ware, both plain and retinned, as well as a full line of galvanized, japanned and sheet iron goods.

The Hutchins Roller Swing Company, Alton, Ill., has closed a contract with the Benicia Iron Works, Benicia, Cal., giving the latter company the right to manufacture the Hutchins roller swing for the entire Western coast. The Novelty Mfg. Company, Live Oak, Fla., has purchased manufacturing rights on the swing for Georgia, Florida, Alabama and Cuba; the American Machine Company, Wilmington, Del., for Maryland, Delaware, New Jersey, District of Columbia and Southeastern Pennsylvania, and the Consolidated Wagon & Machine Company, Salt Lake City, Utah, control the mountain States. Negotiations are now pending for a disposition of the Southern States not already sold out and for the New England States. Several newly patented features have been added to the swing since it was described in these columns.

The United States Cutlery Company, Philadelphia, was chartered at Harrisburg, Pa., with a capital stock of \$5000. John Kennedy, Jr., of 2018 Spruce street, Philadelphia, is a director.

The Stephens Safe & Lock Company, Pittsburgh, Pa., was chartered at Harrisburg, with a capital stock of \$5000. Address W. H. Hill, 810 Park Building, Pittsburgh, Pa.

The National Scale Company has been organized at Beaver Falls, Pa., with a capital of \$125,000, and has applied for a charter. The company will manufacture computing scales and other articles from steel and iron. The incorporators are Jacob Hauser, John Reeves, John Ohnsman, James M. May, John T. Reeves, H. W. Reeves and others.

In our last issue we referred to additions which the Simonds Mfg. Company is making to its Fitchburg, Mass., plant. These additions are necessitated by the growth in the demand for Simonds saws, particularly hand saws, and not band saws, as printed.

The United States Government has recently placed an order for 864,000 square feet of Ruberoid roofing, which is manufactured by the Standard Paint Company, 100 William street, New York. The last order by the Government for this roofing was for 1,500,000 square feet, and another previous order was for 1,000,000 square feet. These orders, together with several smaller requisitions, aggregate about 3,500,000 square feet of Ruberoid roofing which has been ordered by the Government for the Philippines during the last two years. This roofing, we are advised, was selected by the Government because of its peculiar suitability to hot and variable climates, and because of its convenience of application and low cost of maintenance. The company also refers to the roofing as peculiarly attractive for foundries, factories, &c., on account of its heat and acid fume resisting qualities, and the little if any attention required to keep it in repair.

Miscellaneous.

The American Shading Machine Company has been incorporated at Buffalo, N. Y., with a capital of \$18,000, and will engage in the manufacture of shading machines and other mechanical devices and novelties. The directors are Wm. E. Peugeot, Joseph A. Sauter and Josephine Sauter.

The Youngstown Wire & Iron Company, Youngstown, Ohio, manufacturers of iron and wire work, has secured a contract for furnishing steel doors and steel blinds for the new building of the Dollar Savings & Trust Company, now being erected in Youngstown. About 200 windows will be supplied with steel blinds. The Youngstown Wire & Iron Company has also received a contract for furnishing steel doors and steel blinds for the new John Gallagher block, also being built in Youngstown.

The Pittsburgh Coal Company is breaking all previous records in its shipment of coal, having up to July 20 forwarded 4000 cars more coal than during July of last year, and this was accomplished with the operation of 77 mines, as compared with 99 mines last year. Last week the company shipped 1450 cars more than during any week in the history of the organization.

The Shirreffs Worsted Company is erecting a new mill 60 x 200 feet, at Fitchburg, Mass.

The Fitchburg Paper Company, Fitchburg, Mass., is to erect a new mill to replace the building destroyed by fire in the spring.

E. C. Robertson & Son are erecting a new paper mill at Hinsdale, N. H. H. H. Russell of Bellows Falls and Mr. Adams, formerly with the W. A. Cole Paper Company, Putney, Vt., are to erect a wood pulp and paper mill on a privilege just below that of Robertson & Son. Both these plants will manufacture tissue.

The Taylor Corn Husker Company, Aurora, Ill., at the head of which is C. H. Taylor, is arranging for the erection of a new plant at Joliet, which will be much more extensive than the present works. As soon as the first building is completed the machinery will be moved into it from Aurora and then the other buildings will be constructed. Among the new buildings are to be a machine shop, foundry, power plant and wood working shop. The capital stock is to be increased to \$200,000.

Several of the leather manufacturing concerns of Peabody,

Mass., are contemplating new building operations this season. The A. C. Lawrence Leather company is to add new boilers to its power station. The company will also erect a finishing shop. The National Calfskin Company, the Vaughn-Rood Machinery Company, the Essex Tanning Company and T. H. O'Shea will build manufacturing additions.

The Union Mfg. Company, Lancaster, Pa., will on August 16 apply for a charter at Harrisburg, Pa. The company will manufacture bush expanders, pitch reamers, bung extractors, &c. of iron and wood. John Hertzler of Lancaster is a director.

Michael J. Green, Paterson, N. J., is to build a new silk mill at Norwich, Conn. The main building will be 50 x 200 feet and two stories, and the power house 19 x 51 feet.

F. E. Myers & Bro., Ashland, Ohio, manufacturers of force and lift pumps, hay tools, &c., have let the contract for the erection of a storage warehouse in connection with their foundry. It will be used for the storage of iron, coke, sand and foundry necessities, and will be equipped with the latest improved conveying machinery and be up to the times in every respect.

The Canfield-Butler Company, Minneapolis, Minn., has incorporated to manufacture fire escapes. The capital stock of the company is \$500,000, and the incorporators and officers are E. C. Butler, president; Chas. S. Canfield, vice-president, and Eugene Young, secretary and treasurer.

The International Power Vehicle Company, Stamford, Conn., which has become a constituent part of the new American Oil Engine & Shipbuilding Company, will preserve its own name and charter and will continue the manufacture of oil engines and power boats at the Stamford plant. Walter P. Hatch, president of the International Company, is also president of the American Oil Engine & Shipbuilding Company.

The Point Mining & Milling Company, Mineral Point, Mo., is adding to its mill equipment. This company mines and mills floated barytes and pigment that is largely used as a substitute for white lead in paints. Wm. R. Macklind is vice-president and manager.

Dodge & Day, modernizing engineers, Philadelphia, in conjunction with Ballinger & Perrot, architects, are proceeding with the work of rebuilding and extending the plant of the Victor Talking Machine Company, Camden, N. J. The shops are to be electrically operated and motor drives used throughout. The work is to be completed within six months from date. The company suffered severe damage by fire a short time since.

The C. D. Pruden Company, Baltimore, Md., recently organized, has succeeded to the local business of the St. Paul Roofing, Cornice & Ornament Company, whose headquarters are at St. Paul, Minn. The company has an extensive plant at Warner, Dock and Bayard streets, Baltimore, where is manufactured a complete line of architectural sheet metal work and the Pruden patented galvanized iron and copper window frames and sash. The company has already contracted for supplying the most prominent business buildings being erected in Baltimore. C. D. Pruden is president; George Norbury MacKenzie, vice-president and treasurer; Graeme Turnbull, secretary and assistant treasurer, who with Frank C. Bolton and John S. Bridges constitute the Board of Directors.

The Parry Mfg. Company, Indianapolis, Ind., is erecting a new paint shop, two stories high and 80 x 731 feet. The company makes light vehicles.

The Tritt Electrical Mfg. Company, South Bend, Ind., which was recently organized, has leased the two-story and basement Cralaky Building, at 114-120 West Division street. The company has installed an engine and machinery, consisting of lathes, screw machines, punch and drill presses and other miscellaneous tools for the manufacture of electrical specialties. Attention will at first be directed to the manufacture of sparking dynamos, spark coils for gas engines and automobile purposes, and other electrical and mechanical specialties. The company is capitalized at \$15,000, \$9000 of which has already been subscribed.

D. D. Streeter, Chicago, has secured the contract for elevating the railroad tracks running into and through the city of Schenectady, N. Y., the contract price being \$312,485. This price does not include the structural steel work, about 4500 tons of which will be required. The tracks to be elevated include the four main tracks of the New York Central, the Troy branch and the two tracks of the Delaware & Hudson. Retaining walls of concrete will be built between State and Union streets, requiring about 30,000 yards of concrete.

Granite City, Ill., wants capitalists who will organize a company to establish an electric light and power system to furnish municipal and commercial power and lighting. The city will use from 100 to 150 arc lamps, and there is said to be an opportunity for a considerable commercial business.

The Enterprise Bed Company, manufacturer of spring beds, Chicago, is removing to Hammond, Ind., where a new plant is being erected, consisting of the following buildings: One 80 x 150 feet, three 60 x 200 feet and one 25 x 60 feet, giving 46,500 square feet of floor space. Erection of the buildings will begin as soon as plans are completed, and the company expects to be ready to occupy them about December 1, 1904. Very

little new machinery equipment will be required. The company will retain a Chicago warehouse, making shipments every night from Hammond.

The Ford Electric & Mfg. Company has been incorporated at St. Louis, Mo., with a capital stock of \$15,000, for the purpose of repairing electrical machinery and manufacturing coils, commutators, &c. The incorporators are Ethelbert T. Ford and Wm. F. Ryan of St. Louis and Charles Sieber of Webster Groves, Mo.

Sealed proposals will be received by D. W. Ross, engineer, United States Geological Survey, Boise, Idaho, up to 2 p.m. August 25, for 14,000 barrels of Portland cement, to be delivered at Minidoka, Idaho.

The National Clock Company, Cleveland, capital stock \$100,000, has been organized, with A. D. Ray, president; F. M. Baxter, vice-president and secretary; E. W. Livensparger, treasurer, and the above, with J. L. Elthal and G. F. Knippenberg, directors. The company will manufacture a new employers' time register clock and a factory will be established in Cleveland.

The Winton Motor Carriage Company, Cleveland, has placed a contract with the General Fire Extinguisher Company for overhead fire extinguishers for all the buildings in its plant, which covers about 8 acres.

A corporation has been organized at Lewistown, Pa., to manufacture bricks by the sand-lime process. The authorized capital stock of the company is \$40,000 and the officers are B. F. Irving, president; W. A. Keller, vice-president; H. C. Burkett, secretary, and John R. Bingaman, treasurer. A plant for crushing and pulverizing the slag is in operation, and it is proposed to erect at once a new building, 75 feet square, in which will be installed machinery to produce 20,000 bricks a day.

The merging of the Pneumatic Signal Company of Rochester, N. Y., and the Taylor Signal Company of Buffalo has been completed. Formal transfer of the American assets of the Pneumatic Signal Company and all assets of the Taylor Signal Company has been made to the General Railway Signal Company, a new corporation established under the laws of New York and capitalized at \$5,000,000, of which \$2,000,000 is 6 per cent. accumulative stock and \$3,000,000 common stock. This merger gives the new corporation control in the field of all electric and low pressure pneumatic interlocking devices, the two companies having been active competitors and each practically the only competitor of the other in this field. The officers are: President and general manager, Wilmer W. Salmon, Buffalo; vice-president, Frederick Cook, Rochester; second vice-president and treasurer, George D. Morgan, Buffalo; third vice-president, Thomas A. Smyth, Rochester; secretary, Clarence H. Littell, Buffalo.

The Western Electric Company, Chicago, Ill., has secured a contract for the installation of a telephone system at St. Petersburg capable of accommodating 40,000 subscribers. Wires are to be laid in American conduits.

The Turner Tanning Machinery Company, Boston, Mass., has purchased a large part of the business of the Vaughn Machine Company, Peabody, Mass., and will continue to operate the Vaughn plant. The Turner Company has not taken over the large stock of machines, repair parts and supplies on hand, all of which will be disposed of to make room for the manufacture of new goods. There is no question of the financial condition of the Vaughn Machine Company, and all bills will be discounted in the future as they have been in the past. The Vaughn Machine Company is capitalized at \$2,000,000.

The Keystone Metal Company, Hazleton, Pa., was chartered at Harrisburg with a capital stock of \$20,000. C. P. Sharkey, Hazleton, Pa., is a director.

The Gelsner Mfg. Company, Waynesboro, Pa., has just shipped to South Africa a special order of agricultural machinery for Col. A. J. Bester, Heidelberg, South Africa. Colonel Bester, who has been superintending the construction of a plow of his own invention at the Waynesboro plant, will sail shortly for his home.

The Lima Insulator Company has been incorporated at Lima, Livingston County, N. Y., with capital stock of \$100,000, to manufacture electric insulators. The directors are E. W. Lathrop, Boston, Mass.; H. D. Finnucan, Lima, and A. M. Wellman, Friendship, N. Y.

The creditors of the Lackawanna Motor Company, Buffalo, N. Y., including the Lobee Pump & Machinery Company, have instituted proceedings in involuntary bankruptcy in the United States District Court, not being satisfied with the appointment of a receiver which the Motor Company obtained a few days ago through the State Court in proceedings for voluntary dissolution.

The Price Fire Proofing Company has been incorporated at Poughkeepsie, N. Y., with a capital of \$300,000. The directors are W. B. Price, E. P. Platt and F. B. Lown, all of Poughkeepsie.

The O. K. Machine Company has been incorporated at Buffalo, N. Y., for the manufacture of automobile parts, with a capital stock of \$10,000. The directors are Fred'k Lenderman, J. W. Frey and M. F. Frey.

The Iron and Metal Trades

The principal event of the week has been the closing of contracts for 110,000 tons of Standard Bessemer Pig for delivery over ten months, beginning in September, to the Pittsburgh Steel Company, a large maker of Wire products. Of this amount 50,000 tons was sold by the Bessemer Furnace Association, 25,000 tons by M. A. Hanna & Co., and the balance by outside interests. The Pig Iron will be converted into Billets at the Youngstown Steel plant of the Republic Iron & Steel Company, the Pittsburgh Steel Company not having a Steel plant. The transaction is significant because it brings a large tonnage to the Valley merchant Iron furnaces, and thus will to some extent relieve the pressure from that quarter.

There is reported, further, the purchase of 25,000 tons of Bessemer Pig Iron by a Wheeling foundry. The same concern which has the first part of the order for the Pennsylvania Tunnel castings is in the market for 35,000 tons additional. There seems still to be some uncertainty concerning the second half of the second tunnel castings order, and the Pig Iron for it does not appear to have been covered. The Iron for the first half was given to one furnace in New Jersey and two in the Lehigh Valley.

Aside from these larger transactions there have been a series of smaller sales at Pittsburgh and there has been quite some activity in the Chicago market. There have been some good sales, including one lot of 12,000 tons of Basic Pig, in the East. The complaint is general, however, that these sales, nearly all made by Northern furnaces, have been made at low prices, which in many cases are below the cost of production.

In the great consuming territory north of the Ohio and east of the Mississippi River to the Atlantic the current sales have been practically confined to local furnaces. The South has done very little. Production in Alabama is restricted by the labor troubles, and as shipments are going forward steadily, the position statistically must be improving considerably.

Aside from the large transactions referred to, the buying for foundry purposes is done to cover only requirements for pressing needs or for the current quarter, the buyers apparently not having abandoned their waiting attitude.

From the Finished Iron and Steel markets come fair reports. There is a modest increase in the tonnage in the majority of lines, but the railroads are still taking material conservatively. As an indication of the amount of work going on it may be noted that the July sales of the leading Structural interest were over 30,000 tons, an unusually large proportion of it being for buildings and miscellaneous structures. The Plate trade is reported to be showing some improvement, and the low prices of Sheets appear to have attracted buyers. Bar Iron is somewhat stronger, particularly in the Chicago market.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,
Declines in Italics.

At date, one week, one month and one year previous.

Aug. 3, July 27, July 6, Aug. 5,
1904. 1904. 1904. 1903

PIG IRON:

Foundry Pig No. 2, Standard, Philadelphia	\$14.25	\$14.25	\$14.50	\$17.25
Foundry Pig No. 2, Southern, Cincinnati	12.00	12.00	11.75	15.25
Foundry Pig No. 2, Local, Chicago	13.25	13.25	13.25	17.25
Bessemer Pig, Pittsburgh	12.85	12.50	12.25	18.85
Gray Forge, Pittsburgh	11.85	11.85	12.00	16.15
Lake Superior Charcoal, Chicago	14.50	14.50	14.50	21.50

BILLETS, RAILS, &c.:

Steel Billets, Pittsburgh	23.00	23.00	23.00	27.00
Steel Billets, Philadelphia	24.00	24.00	24.00	28.25
Steel Billets, Chicago	22.00	22.00	24.00	28.00
Wire Rods, Pittsburgh	28.00	28.00	28.00	35.50
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00

OLD MATERIAL:

O. Steel Rails, Chicago	10.00	10.00	9.50	17.00
O. Steel Rails, Philadelphia	11.50	11.50	11.00	18.75
O. Iron Rails, Chicago	15.00	14.50	14.00	18.50
O. Iron Rails, Philadelphia	13.75	13.75	14.50	19.50
O. Car Wheels, Chicago	11.00	11.00	10.50	21.50
O. Car Wheels, Philadelphia	10.50	10.50	11.00	19.50
Heavy Steel Scrap, Pittsburgh	11.00	11.00	11.00	19.00
Heavy Steel Scrap, Chicago	9.00	9.00	9.00	15.50

FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia	1.48½	1.48½	1.48½	1.65
Common Iron Bars, Chicago	1.30	1.30	1.30	1.60
Common Iron Bars, Pittsburgh	1.30	1.30	1.30	1.65
Steel Bars, Tidewater	1.49½	1.49½	1.49½	1.75
Steel Bars, Pittsburgh	1.35	1.35	1.35	1.60
Tank Plates, Tidewater	1.74½	1.74½	1.74½	1.78
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater	1.74½	1.74½	1.74½	1.73½
Beams, Pittsburgh	1.60	1.60	1.60	1.60
Angles, Tidewater	1.74½	1.74½	1.74½	1.73½
Angles, Pittsburgh	1.60	1.60	1.60	1.60
Skelp, Grooved Steel, Pittsburgh	1.32½	1.32½	1.32½	1.85
Skelp, Sheared Steel, Pittsburgh	1.32½	1.32½	1.32½	1.90
Sheets, No. 27, Pittsburgh	2.00	2.00	2.00	2.60
Barb Wire, f.o.b. Pittsburgh	2.45	2.45	2.50	2.60
Wire Nails, f.o.b. Pittsburgh	1.85	1.85	1.90	2.00
Cut Nails, f.o.b. Pittsburgh	1.65	1.65	1.75	2.15

METALS:

Copper, New York	12.50	12.62½	12.62½	13.00
Spelter, St. Louis	4.75	4.75	4.75	5.50
Lead, New York	4.20	4.10	4.20	4.12½
Lead, St. Louis	4.00	4.00	4.07½	4.15
Tin, New York	27.00	26.87½	25.60	28.25
Antimony, Hallett, New York	7.00	7.25	7.25	6.00
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.40	3.40	3.64	3.90

Chicago.

FISHER BUILDING, August 3, 1904.—(By Telegraph.)

In some lines of Finished Iron and Steel the better feeling reflected for the last two or three weeks in these columns is resulting in a gratifying increase in actual orders, while in others the increased inquiry is not resulting in the tonnage that had been hoped for, although there is no doubt that business conditions are growing better in all lines. The most active market at the present writing is Northern Pig Iron, but even here the relatively heavy tonnage that is being placed is in the nature of delayed business, the majority of firms ordering smaller quantities than they would under normal conditions. Southern Pig Iron is almost a negligible quantity at the \$9.50 price, at which most of the Southern furnaces are holding their product. A small tonnage of Rails from electric roads is being booked, but nobody expects to sell a very large tonnage of Rails during midsummer. Orders and inquiries for Structural Steel are improving from week to week. Plates are in better demand, and even Sheets seem to be recovering somewhat from the badly demoralized condition in which they have been for several months. A fair demand is noticed for Pipe and Boiler Tubes, but it is not what it should be, and there is a likelihood that jobbers may be caught short when the actual demand commences. The city of Chicago is in the market for 2300 tons of Cast Iron Pipe, and several 500-ton lots have been placed with the leading producers within the last few days. Pipe business in general, however, is quiet, and the number of lettings is astonishingly small. Old Materials have advanced again as the result of speculation, the demand coming from dealers who buy to store rather than from consumers.

Pig Iron.—We make no change in any of the prices in our Pig Iron list, although no seller in this market is willing to acknowledge that he will accept less than the \$9.50 basis

for Southern Pig Iron. Buyers, however, are so insistent that \$9.25 is still available that we leave the quotation stand for another week; \$9.50, Birmingham, is now made by some Southern producers for delivery up to the end of December, although other producers are willing to accept that price only for delivery in August and September. One thing is certain, that there is almost no Southern Pig Iron being sold in this market on the basis of \$9.50, because that would bring it practically up to the price of Northern Iron, and the buyer would have additional switching charges on the Southern Iron, bringing it above the actual minimum of Northern. Even at the same cost, delivered, Northern Iron usually enjoys an advantage, independent of quality, in the fact that buyers are not compelled to make so large an immediate outlay for freight as they are on shipments from Southern fields. Northern Iron is strong at \$13.25 to \$13.50 for No. 2, and quite a large tonnage was moved last week, orders coming in 500, 1000 and 2000 ton lots, aggregating a large weekly booking. This trade is not limited to a few large buyers, but is distributed among melters generally, including even the smaller foundries. No one would be surprised to see prices on Northern Iron advanced any time. In the following price-list the lower prices would be named only for desirable lots and prompt shipment, the higher prices representing in a majority of cases the ordinary car lot business for current shipment and large tonnage lots for delivery in the fourth quarter of the year. We quote:

Lake Superior Charcoal.....	\$14.50 to \$15.50
Northern Coke Foundry, No. 1.....	13.75 to 14.00
Northern Coke Foundry, No. 2.....	13.25 to 13.50
Northern Coke Foundry, No. 3.....	13.00 to 13.25
Northern Scotch, No. 1.....	13.75 to 14.00
Ohio Strong Softeners, No. 1.....	14.55 to 14.80
Ohio Strong Softeners, No. 2.....	14.05 to 14.55
Southern Silvery, according to Silcon..	14.15 to 15.15
Southern Coke, No. 1.....	13.40 to 13.65
Southern Coke, No. 2.....	12.90 to 13.15
Southern Coke, No. 3.....	12.65 to 12.90
Southern Coke, No. 4.....	11.90 to 12.15
Southern Coke, No. 1 Soft.....	13.40 to 13.65
Southern Coke, No. 2 Soft.....	12.90 to 13.15
Southern Gray Forge.....	11.90 to 12.15
Southern Mottled and White.....	11.65 to 11.90
Malleable Bessemer.....	13.75 to 14.00
Standard Bessemer.....	14.25 to 14.75
Jackson County and Kentucky Silvery,	
6 to 10 per cent. Silcon.....	16.30 to 18.30
Alabama Basic.....	to 13.15
Virginia Basic.....	13.85 to 14.10

Billets.—Not a ripple disturbs the stagnant surface of the Billet market, and what business is placed is done at the basis of \$1 to \$2 per ton below association prices. Pool price is \$24 per gross ton, Chicago, for Billets 4 x 4 and larger, for either Open Hearth or Bessemer, for forging or rolling purposes, with extras for smaller sizes and extras for high carbon analysis.

Rails and Track Supplies.—The Rail business is quiet, although several orders for 1000 to 2000 ton lots have been placed within the week by electric roads with the leading producer, and a fair pick up business is being booked by minor members of the Rail pool. No confirmation can be learned here of the sensational newspaper stories about large purchases by the Harriman or other roads. Standard Sections are unchanged on the \$28 basis, and Light Sections range from \$22 to \$25 per gross ton. Angle Bars are unchanged at 1.35c. to 1.40c. Spikes are now quoted at 1.65c. to 1.70c. in car lots from mill and as high as 1.85c. in small lots from store. Track Bolts are selling at 2.20c. to 2.25c., base, from mill, with Square Nuts, and 10c. to 15c. extra for Hexagon Nuts, with an advance of about 15c. for shipment from store.

Structural Material.—None of the large building contracts has been placed outside of 5000 tons for the Marshall Field warehouse, which was secured by the American Bridge Company. Inquiries are plentiful and the general feeling is optimistic. A better pick up business is being enjoyed both from mill and from store compared with the past two or three months. Prices are unchanged, as follows: Beams and Channels up to and including 15 inches and Angles 3 inches on one leg and larger, 1.76½c., Chicago; Tees, \$1 per ton extra. Store prices on Structural are as follows: Angles, Beams, Channels and Tees, base sizes, 2c. to 2.10c.; Tees, 2.05c. to 2.15c., either random lengths or cut to lengths 5 feet and over.

Plates.—The Plate business continues to improve slowly and orders received are for larger and larger tonnages. Apparently buyers have made up their minds that they have nothing to gain by waiting and there may be some advantage in having orders booked early as far as deliveries are concerned. Independent mills are shading prices on narrow widths and on light weights. For instance, No. 9, which is held by the association at 1.85c., Pittsburgh, is being sold by independent Plate mills and by Sheet mills at 1.65c. and No. 8 at 1.60c. In the heavier gauges, such as ¼, ⅝ and ¾ inch, independent Plate mills find it necessary to shade the prices only about \$1 to \$1.50 per ton to get business for such sizes as they can roll. Plate Association prices are unchanged, as follows: 1.60c., Pittsburgh, for ¼ inch and heavier, 1.70c. for 3-16 inch, 1.75c. for No. 8, 1.85c. for No. 9. Store price on all gauges from No. 10 to the heaviest

is 2c. to 2.10c., f.o.b. warehouse, with the usual extras for wide widths and special qualities.

Sheets.—There is an apparent disposition on the part of buyers to take advantage of present low prices in Sheets and to execute contracts for forward delivery at present prices in the fear that Sheet mills may get together and arrive at an understanding that will put a stop to present ruinous competition. Prices have not actually advanced as compared with our quotations of the last two weeks, but there is less tendency to cut under these prices than there was before. We repeat last week's quotations without change: One Pass Cold Rolled Blue Annealed, Nos. 9 and 10, 1.76½c.; Nos. 11 and 12, 1.86½c.; Nos. 13 and 14, 1.91½c.; Nos. 15 and 16, 2.01½c.; Nos. 18 to 20, 2.01½c. to 2.06½c.; Nos. 22 to 24, 2.06½c. to 2.11½c.; No. 26, 2.11½c. to 2.16½c.; No. 27, 2.16½c. to 2.21½c.; No. 28, 2.26½c. to 2.31½c.; No. 29, 2.41½c. to 2.46½c.; No. 30, 2.51½c. to 2.56½c. Store prices on Sheets are unchanged, as follows: No. 10 and heavier, 2c. to 2.10c.; No. 12, 2.05c. to 2.15c.; No. 14, 2.10c. to 2.20c.; No. 16, 2.20c. to 2.30c.; No. 18, 2.30c. to 2.40c.; No. 20, 2.30c. to 2.40c.; No. 22, 2.35c. to 2.45c.; No. 24, 2.40c. to 2.50c.; No. 26, 2.50c. to 2.60c.; No. 27, 2.60c. to 2.70c.; No. 28, 2.70c. to 2.80c.; No. 29, 2.85c. to 2.95c. Galvanized Sheets are extremely weak, the ruling discounts being 80 and 5 to 80 and 10, Pittsburgh, for carload shipments from mill, and 75, 10 and 5 to 80 per cent. discount for smaller lots from store, Chicago. One Eastern producer of Galvanized with a branch warehouse in Chicago for a time badly demoralized store prices here, offering as high as 80 and 2½ discount from stock, but it is understood that this stock is now exhausted and will not be replaced, and for that reason 80 per cent. off is rather difficult to get now, the ruling quotations being 75, 10 and 5 and 75, 10 and 10. A menace to the market at the present moment is a relatively large bankrupt stock of Galvanized Sheets, Tin Plate and Sheet workers' specialties and tools which is to be auctioned off August 4. This stock is advertised by the receiver as including about 500 bundles of Sheet Steel and large quantities of Painted and Galvanized corrugated material.

Bars.—Bar Iron has strengthened a little, and it now requires a pretty good order to secure the minimum price of 1.30c. A better demand exists both from the implement and vehicle makers and from the general trade, but it is still far from what it should be. Steel Bars are unchanged at the official quotation of 1.51½c., base, half extras, Chicago, in carload lots for Bessemer and 5c. extra for Open Hearth. Independents are shading this price down to nearly the basis of Bar Iron if not quite so. Soft Steel Angles, smaller than 3 inches on one leg, are unchanged in their prices of 1.45c., base, Pittsburgh, or 1.61½c., Chicago. Hoops are in slow demand, but prices are unchanged, nominally at least, as 1.71½c. rates, full extras. Store prices are as follows: Iron Bars, 1.70c. to 1.75c., base, full extras; Steel Bars, 1.70c. to 1.75c., base, half extras; Hoops, 2.10c. rates, full extras.

Merchant Steel.—With many buyers away on their vacations the contracting movement among implement manufacturers is none too active. The plants of the International Harvester Company have closed for their annual midsummer season of inventory and repairs, and it will be some weeks before the active fall buying campaign will begin with them. That corporation is, however, becoming less and less a factor in the Iron and Steel trade, owing to the fact that each year it widens the scope of its own manufacture of raw materials. Official prices on Merchant Steel are as follows: Open Hearth Spring Steel to the general trade, 1.90c. to 2.10c.; Smooth Finished Machinery Steel, 1.76½c. to 1.81½c.; Smooth Finished Tire, 1.71½c. to 1.76½c.; Sleigh Shoe, flat, 1.56½c. to 1.61½c.; Sleigh Shoe, concave and convex, 1.66½c. to 1.71½c.; Cutter Shoe, 2.25c. to 2.35c.; Toe Calk Steel, 2.06½c. to 2.11½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting at 52 per cent. in car lots and 47 per cent. in less than car lots.

Merchant Pipe.—No changes are announced in discounts, and price cutting is greatly minimized by the fact that the present discounts are supposed to bring the prices dangerously near actual cost for such independent mills as are not equipped as economically as is the leading producer. These discounts are supposed to be for carload lots, but there is no doubt that desirable less than car lot business could secure same discounts. The following discounts are for carload lots, Chicago:

	Steel Pipe.		Guar. Wt'ght Iron.	
	Black.	Galv.	Black.	Galv.
	Per cent.	Per cent.	Per cent.	Per cent.
¼ to ½ inch.....	68.35	53.35	67.35	52.35
½ inch.....	71.35	61.35	70.35	60.35
¾ to 3 inches.....	76.85	66.85	75.85	65.85
3½ to 6 inches.....	75.85	65.85	74.35	64.35
7 to 12 inches.....	70.85	55.85	69.85	54.35

Boiler Tubes.—A little better feeling exists in this market, but business is still extremely dull. These discounts for less than carload lots, Chicago, are as follows:

	Steel.	Iron.	Seamless Steel.
1 to 1½ inches.....	46.35	41.35	52.35
1½ to 2¼ inches.....	58.35	41.35	40.35
2½ inches.....	60.35	46.35	43.35

2½ to 5 inches.....	60.35	53.35	(up to 4 in. 1 50.85
6 to 13 inches.....	58.35	41.35

Carload buyers are given a two-point better discount than the above. Warehouse prices on Boiler Tubes for delivery from store, Chicago, are as follows:

	Steel.	Iron.	Seamless Steel.
1 to 1½ inches.....	42½	37½	40
1½ to 2½ inches.....	52½	35	37½
2½ inches.....	55	37½	40
2½ to 5 inches.....	62½	47½	47½
6 inches and larger.....	52½	35	..

Cast Iron Pipe.—The leading producer secured the contract for 500 tons from the city of Milwaukee, 500 tons from Traverse City, Mich., and 600 tons from Bellaire, Ohio. The city of Chicago is in the market for about 2300 tons, divided as follows: 5000 lengths 6-inch, weighing 420 pounds; 4000 lengths 8-inch, weighing 555 pounds; 300 lengths 12-inch, weighing 1000 pounds; 350 lengths 16-inch, weighing about 1500 pounds. The proposals will be received until 11 a.m. August 6 by F. W. Blocki, Commissioner, Department of Public Works. This Pipe is wanted for the quickest possible shipment. Prices are unchanged: \$25.50 the maximum for 4-inch Water Pipe and \$24.50 for 6-inch and heavier, and \$1 extra for Gas Pipe. Better prices than these will be named on lots of several hundred tons and above.

Old Material.—Under the impetus of speculative demand prices have again risen on many lines of Old Materials, and with speculative dealers bidding against each other the consumers are disposed to delay their purchases as long as possible in the hope of covering their requirements at prices much lower than the fictitious ones now prevailing. The Great Northern has promulgated a list aggregating about 2500 tons and the Chicago & Northwestern has a list of about 1200 tons which was on the market until Monday of this week. There is a general feeling in the trade that railroads are withholding much of the materials which they offered in the hope of securing still higher prices as a result of the speculative demand. We advance Old Iron Rails, Old Steel Rails and Iron Car Axles 50c. a ton and add 25c. a ton to Nos. 1 and 2 Railroad Wrought, Wrought Pipe and Flues, Iron, Steel and Machine Shop Turnings. The following quotations are per gross ton, Chicago:

Old Iron Rails.....	\$15.00 to \$15.50
Old Steel Rails, 4 feet and over.....	11.25 to 11.75
Old Steel Rails, less than 4 feet.....	10.00 to 10.50
Heavy Relaying Rails, subject to inspection.....	21.00 to 22.00
Heavy Relaying Rails, for side tracks.....	18.00 to 20.00
Old Car Wheels.....	11.00 to 11.50
Heavy Melting Steel Scrap.....	9.00 to 9.50
Mixed Steel.....	8.00 to 8.50

The following quotations are per net ton:

Iron Fish Plates.....	\$12.50 to \$13.00
Iron Car Axles.....	15.50 to 16.00
Steel Car Axles.....	13.50 to 14.00
No. 1 Railroad Wrought.....	10.75 to 11.25
No. 2 Railroad Wrought.....	9.75 to 10.25
Shafting.....	12.50 to 13.00
No. 1 Dealers' Forge.....	8.50 to 9.00
Wrought Pipes and Flues.....	7.50 to 7.75
Iron Axle Turnings.....	7.25 to 7.50
Soft Steel Axle Turnings.....	7.25 to 7.50
Machine Shop Turnings.....	6.75 to 7.00
Cast Borings.....	3.50 to 4.00
Mixed Borings, &c.....	3.50 to 4.00
No. 1 Mill.....	6.00 to 6.50
Country Sheet.....	4.50 to 5.00
No. 1 Bolters, cut to Sheets and Rings.....	7.00 to 7.50
Heavy Cast Scrap.....	9.50 to 10.00
Stove Plate and Light Cast Scrap.....	7.75 to 8.25
Railroad Malleable.....	8.25 to 8.75
Agricultural Malleable.....	7.75 to 8.00

Metals.—The market is extremely quiet and no changes in prices have been made. The present market is as follows: Copper is unchanged in price, Casting being held at 12¾c. and Lake at 13c. Pig Tin is now quoted at 28c. to 28¼c. Pig Lead is quoted at 4.20c. for 50-ton lots, 4.10c. to 4.20c. for car lots and 4.40c. for less than car lots. Spelter is sold at 4.80c. to 4.90c. for car lots and 5.10c. to 5.25c. for small lots. Sheet Zinc is 6c. for car lots of 600-lb. casks and 6.25c. to 6.30c. for less than car lots. Old Metals are as follows: Copper Wire and Heavy, 11c. to 11½c.; Copper Bottoms, 9¾c.; Copper Clips, 11c. to 11½c.; Red Brass, 9¾c.; Red Brass Borings, 8c.; Yellow Brass, Heavy, 7¾c.; Yellow Brass Borings, 6¾c.; Light Brass, 5¾c.; Tea Lead, 4c.; Zinc, 4.25c.; Pewter, No. 1, 17½c.; Block Tin Pipe, 22½c.

Coke.—There is very little doing in this commodity, and it is a surprise to all interests that melters can stay in business and use as little Coke as they apparently are using. We quote: \$1.75 to \$1.90 per ton, f.o.b. Connellsville ovens, seems to be the going price for Foundry Coke, with prices a shade lower at Virginia and West Virginia ovens. Freight from Connellsville, Pocahontas and New River regions, \$2.65 per ton; from Sage County, Va., ovens, \$2.25 per ton.

Templeton, Kenly & Co., Chicago, have removed their offices from The Rookery to their shops and warehouse at 33-37 East Ontario street. The firm makes Simplex Car Jacks and deals in Light Section Rails and Track Supplies.

Philadelphia.

FORREST BUILDING, August 2, 1904.

The trade are talking more hopefully in regard to the situation, but when it is considered that business has been almost down to zero, during the past five or six weeks, the outcome is not inspiring. Nevertheless more business is being done in nearly all lines, and prices are pretty well maintained. This, however, is due more to restriction in output and other protective measures, rather than to any improvement in general conditions. The business of the country must go on, and while it may be limited in comparison with the past three or four years, it will at some time reach a point at which recovery will commence. There is nothing to lead to the assumption that that point has been reached yet.

The most striking feature is in the way the market is controlled as compared with former years. Prices are fixed and are maintained, and if there appears to be danger of overproduction, restriction commences immediately. There is no haphazard work about it, so that the trade begin to realize that there is a basis of values beyond which there can be no recession. It does not follow, however, that prices will be maintained at their present level. With a limited demand costs weaken, and after a while they get to a point at which lower quotations become possible, and when finally "hard pan" is reached, the reverse process comes into operation and the trend is upward. It is hardly likely that a movement of that character will be seen this year. The country is too big and too rich to stand still, so that a considerable business can always be depended upon, but it must be remembered that we have more than 20,000,000 tons of Pig Iron capacity, but for the time being there is only a 10,000,000 or 12,000,000 ton consumption. This leaves a large percentage of idle capacity, which runs down the line, affecting all items of cost, and although every decline may be contested, the preponderance of supply or demand decides the ultimate outcome. On this theory some articles are already on rock bottom, but others held by price agreements seem rather high, and are therefore more liable to disruption, although it is probable that nothing would be gained by it. Still, there are ways of maintaining agreements nominally, while as a matter of fact they are not maintained at all, and cases of this kind are not infrequent, although it must be a very attractive order to induce infractions of this kind, and, as a rule, prices are maintained much better than they were in former years when there was a scarcity of business such as there is now.

Taking everything into account, however, the month opens somewhat favorably, the feeling is better and more business is around, not in large volume, but enough to give hopes of further improvement in the near future, but the idea of any great revival is out of the question under the conditions which are likely to prevail during the remainder of the year.

Pig Iron.—Reports from the trade are much the same as they were a week ago—viz., a little more business and a somewhat better feeling. Prices are about the same and are neither strong nor weak, but ready to be either, according as the demand may be. At the moment it is impossible to predict what the next change will be, as producers keep such a close watch on the market that they adjust themselves to all changes. A falling off in demand is met by a curtailment in supply, and an improvement in the demand by liberal sales for forward delivery. For the present, therefore, there is an impression that curtailment has gone far enough, in which case prices are not likely to show much change until the next monthly furnace report is issued, and even then production will be further adjusted to current requirements. The point to be considered, therefore, is in regard to consumption, as it is clear that over supply will not be permitted. The disposition in Wall Street and outside the trade is in the direction of extreme optimism, but how far this will influence business is an unsolved problem. Consumers of Pig Iron are inclined to regard their order books as a safe guide, rather than a lot of talk which may be put out for ulterior purposes, yet it certainly does cause a good deal of heart searching. The question is frequently asked: "How is it outside? We are doing no business. Is it possible that we have lost our grip? We hear so much about trade improvement, and the advance in iron stocks is so remarkable that we almost doubt the evidence of trade depression which comes to us through our own business. Can it be that business is better than we find it in our own particular field?" This is no fancy sketch. Probably four out of five ask questions of that kind, and it is certainly a difficult matter to reconcile conditions as they are with conditions as they are reported to be. As regards the immediate future there appears to be no good reasons for expecting anything different to what they are now. There is nothing that points to a larger volume of business, but even 1,000,000 tons of Pig Iron per month is considerable, so that there is always something doing. But what everybody wants to know is in regard to the later months of the year, which is, of course, beyond any one's knowledge. A candid consideration of the prevailing conditions does not lead to any very hopeful expectations, however. The railways are economizing to the utmost, and as they will doubtless continue this policy until the crops are assured, no great help ought to be

expected from that source; yet whenever the improvement does set in it will begin with the railways. This may take shape in the placing of a few orders for Rails for next year's delivery, and possibly for some cars and locomotives. The railways are specially interested in the maintenance of good financial conditions and they are shrewd enough to see that the public are as ready to buy bonds as they are to sell them, so that anything that fosters that feeling is in line with their wishes; consequently, when any buying is done, it will be exploited for all there is in it. But, while things might be better immediately, there is no probability that they will be so until after the election, but in the meanwhile no serious recessions are probable, unless disaster occurs in the corn or cotton crop, which for the present appear to be in excellent condition. Prices, as we said before, are about as follows for Philadelphia and nearby deliveries:

No. 1 X Foundry.....	\$15.00 to \$15.25
No. 2 X Foundry.....	14.25 to 14.50
No. 2 Plain.....	13.50 to 13.75
Standard Gray Forge.....	13.00 to 13.25
Ordinary Gray Forge.....	12.50 to 12.75
Southern No. 2 X Forge, rail.....	13.75 to 14.00
Basic.....	13.00 to 13.15
Low Phosphorus.....	17.50 to 18.00

Steel.—There has been quite an active demand for Steel, and, as deliveries are wanted at once, it is considered that consumers will be pretty steady buyers during the remainder of the year. Prices firm at about \$24, delivered.

Plates.—Business has been a trifle better during the past week, although there is no change in the general situation. Orders are mostly for small lots and are wanted immediately, but there is not much work for forward delivery, so that the outlook is more or less problematical. At the same time whatever change may come is likely to be in the direction of improvement, as stocks are in small compass, and must be renewed with every new order that comes in. Prices unchanged, as follows:

	Carloads.	Part carloads.
Tank Steel, ¼-inch and heavier.....	1.73½	1.78½
Tank Steel, 3-16-inch.....	1.83½	1.88½
Tank Steel, Nos. 7 and 8, B. W. G.....	1.88½	1.93½
Tank Steel, Nos. 9 and 10, B. W. G.....	1.93½	2.03½
Flange or Boiler Steel.....	1.83½	1.88½
Commercial Fire Box Steel.....	1.93½	1.98½
Still Bottom Steel.....	2.03½	2.08½
Locomotive Fire Box Steel.....	2.23½	2.28½
Plates over 100 to 110 inches.....	.05 per lb.	extra
Plates over 110 to 115 inches.....	.10	"
Plates over 115 to 120 inches.....	.15	"
Plates over 120 to 125 inches.....	.25	"
Plates over 125 to 130 inches.....	.50	"
Plates over 130 inches.....	1.00	"
All sketches (excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches).....	.10	"
Complete Circles.....	.20	"

Structural Material.—There is some improvement in this department, chiefly in the building trade. Some pretty fair sized orders have been placed for local work and others are pending from the fire districts. One lot of 1000 tons Steel Bars was placed, to be used in connection with cement work in skyscrapers and others of a similar character are under negotiation. Prices unchanged, as follows: Beams, Channels and Angles, 1.73½c. to 1.85c., according to specifications, and small Angles, 1.50c. to 1.55c.

Bars.—Business is extremely dull, but it is believed that more activity will be developed in the near future. Many of the stores that bought heavily during the early spring have about exhausted their supplies, and will of necessity have to make replenishments for the fall trade. There are plenty of mills that are anxious for business, but prices are firmly maintained, and it is not likely that anything can be done at less than the regular quotations of 1.48½c. and upward for either Steel or Refined Iron.

Sheets.—There is no particular change in the Sheet trade. The demand has improved during the past few days and manufacturers are rather inclined to expect considerable activity during the next few weeks.

Old Material.—The position is somewhat peculiar and rather difficult to size up with much confidence. Holders expect to get more money, but consumers are doing so little that they are opposed to higher prices. Temporarily, however, sellers have the advantage and in spots are getting better prices, but there is not enough demand to make the advance a certainty, although some holders feel very confident. Bids and offers for deliveries in buyers' yards are about as follows:

No. 1 Steel Scrap, delivered.....	\$11.50 to \$12.00
Old Steel Axles, delivered.....	14.50 to 15.00
Old Iron Axles, delivered.....	17.50 to 18.00
Old Iron Rails, delivered.....	13.75 to 14.50
Old Car Wheels, delivered.....	10.50 to 11.00
Choice Scrap, R. R. No. 1 Wrought, delivered.....	13.00 to 13.50
Machinery Scrap, delivered.....	11.50 to 12.50
Low Phosphorus Scrap, delivered.....	16.00 to 16.50
Wrought Iron Pipe, delivered.....	9.50 to 10.00
No. 2 Forge Fire Scrap, delivered.....	9.00 to 9.50
No. 2 Forge Fire Scrap, Ordinary, delivered.....	7.50 to 7.75

Wrought Turnings, delivered.....	8.50 to 9.00
Cast Borings, delivered.....	6.25 to 6.75
Stove Plates, delivered.....	8.75 to 9.25

The partnership lately existing between Weston Donaldson and George J. Newton, under the firm name of Donaldson & Newton, has been dissolved by mutual consent, and took effect on the 30th day of July, 1904. The business will be continued by Weston Donaldson under his own name at the same location as before.

Cincinnati.

FIFTH AND MAIN STS., August 3, 1904.—(By Telegraph.)

Pig Iron.—The buying movement has not continued so strong through the past week, although quite a little business has been placed. Chicago and the territory west of Ohio is reported as showing greater activity than points East, and a very substantial tonnage has been taken. Many Southern producers have advanced prices, and some have withdrawn from the market entirely. It is remarkable to what extent the Southern furnaces have disposed of their product in view of the very low prices being named by Northern makers. As noted last week, there are no points in Ohio, Pennsylvania or Eastern Michigan where Southern Iron men can compete with Northern, and the tonnage of Southern Iron sold during the month has practically all gone into territory west of Ohio. As a result, Southern furnaces are holding at or above \$9.25 basis, and \$9 Iron is now but a reminiscence. Buyers are feeling the pulse of the market for forward delivery, while the furnaces, as a rule, seem little disposed to make any contracts for a period later than January 1. It is the general opinion that the trade is not fully covered for August, and it is expected there will be fair buying during the next 30 days. Foundrymen who have been buying Southern Iron recently, it is anticipated, have not fully covered their requirements, but have reserved a part of their tonnage in the hope of getting Northern Iron on a slightly lower basis. This is not looked for, as there seems to be no reason why Northern producers should make any further reduction. There has been a rumor of certain furnaces in the South selling Iron below the schedule during the week, and to an extent this may be true, as some furnaces have a freight differential into certain territory of from 75c. to \$1 per ton, and it would no doubt pay these furnaces to shade the schedule by 25c. to get their Iron into this part of the country rather than ship further West where the Birmingham basis could be maintained on a differential of from 25c. to 50c. per ton. Generally speaking, the local trade is light. One Cincinnati concern is expected to close a contract to-day for 500 tons of Malleable. Stove manufacturers are doing some buying, but in small quantities of 300 and 500 ton lots. The Northern Ohio implement works who were in the market for 2200 tons are expected to close the deal on Wednesday. Sales reported during the week are 4000 tons to the Pipe Company for Louisville delivery; 500 tons of Gray Forge for a concern at Terre Haute, and 1000 tons for an Indianapolis plant. Freight rates from Hanging Rock district to Cincinnati, \$1.15, and from Birmingham, \$2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$12.50 to \$12.75
Southern Coke, No. 2.....	12.00 to 12.25
Southern Coke, No. 3.....	11.50 to 11.75
Southern Coke, No. 4.....	11.25 to 11.50
Southern Coke, No. 1 Soft.....	12.50 to 12.75
Southern Coke, No. 2 Soft.....	12.00 to 12.25
Southern Coke, Gray Forge.....	11.00 to 11.25
Southern Coke Mottled.....	10.75 to 11.00
Ohio Silvery, No. 1.....	15.65 to 16.15
Lake Superior Coke, No. 1.....	13.15 to 13.65
Lake Superior Coke, No. 2.....	12.65 to 13.15
Lake Superior Coke, No. 3.....	12.15 to 12.65

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$16.25 to \$16.75
Lake Superior Car Wheel and Malleable.....	15.80 to 16.30

Coke.—The demand for this staple is showing little strength that can be regarded with any degree of satisfaction by the trade in general. Few sales are being made and they only for immediate needs. Prices remain the same at \$1.75 to \$2, f.o.b. ovens, for the best grades.

Plates and Bars.—Dealers are greatly encouraged with the increased demand for this class of material; especially is this true of Structural Iron, and sales are reported covering matters that have been pending for a long time. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.40c., with half extras; the same in smaller lots, 1.70c., with full extras; Steel Bars, in carload lots, 1.48c., with half extras; the same in smaller lots, 1.80c., with full extras; Base Angles, 1.73c. in carload lots; Beams and Channels in carload lots, 1.73c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 2c.; Sheets, 16-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; 14-gauge, in carload lots, 1.95c.; in smaller lots, 2.50c.; Steel Tire, ¾ x 3-16 and heavier, 1.68c. in carload lots.

Old Material.—This market looks a shade better this week, and it is hoped it will strengthen as the days go by. Prices are unchanged, with inquiry stronger. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad

Wrought Scrap, \$11 to \$11.50 per net ton; No. 1 Cast Scrap, \$9.25 per net ton; Iron Rails, \$14.50 per gross ton; Steel Rails, rolling mill lengths, \$11 to \$11.50 per gross ton; Iron Axles, \$15 per net ton; Car Wheels, \$11 to \$11.50 per gross ton; Heavy Melting Scrap, \$11.50 per gross ton; Low Phosphorus Scrap, \$11.50 to \$12 per gross ton.

Birmingham.

BIRMINGHAM, ALA., August 1, 1904.

So far as the Iron market is concerned, the only prominent feature is the stiffening of the market. Prices are more uniform than has been the case for some time, there being no reports of sales under a basis of \$9.50 for No. 2 Foundry. With some interests only a few of the grades in popular demand are being offered. This is owing to rather free sales that have been made covering in delivery the next 60 and 90 days.

There were some sales of No. 3 Foundry at \$9 and some of No. 4 Foundry at \$8.75 and \$8.50, but there were no sales of magnitude at any of the prices quoted. One of the leading interests has been well sold up on the lower grades and is now about out of the market for them. Sales made have, as a rule, covered deliveries only for the period of 60 and 90 days. But there have been a few cases when deliveries have been liberalized, and reports have been in circulation as to deliveries that have extended into the early part of the coming year. But if they have prevailed it has been to only a limited extent. As a rule the furnace interests are limiting deliveries to within the period of this year, and it can be said, in all frankness, that as a rule they all expect an advance over current values before the close of the year.

The Bessemer furnaces of the Tennessee Company are out of blast, and those in blast at Ensley are running to supply the Steel mill, so there is mighty little show for increased production in the near future.

It is a matter of difficulty to gauge the situation as to the mining outlook. Each side claims the advantage in this respect, and each side is exercising all the diplomacy at its command to obtain and hold any advantage that occasion presents. On one point there can be no question, and that is no terms have been offered to the miners' union as an organization looking to an agreement on the wage scale. But each interest has formulated the price on which it will employ all labor connected with the different phases of mining, without regard to organizations, and they propose so far to strictly hold to these conditions. The miners are getting very restless under the prevailing conditions and, in numbers small as yet, are gradually drifting to where work is being offered. Some notices have been served to the effect that cottages occupied by those not in the actual service of the various companies must be vacated. The object is apparent. They are wanted for those who may desire to go to work where work is offered. It is a hard matter to guess how the differences will end. The leaders know just as little as the outsiders.

Some interest has been excited of late by the announcement of the discovery of valuable Gray Ore property situated in Talladega County, on the line of the Mineral Branch of the Louisville & Nashville Railroad. There can be no question of the value of the discovery. Your correspondent called attention to it years ago and predicted then that it would be the saving of the furnace interests of Eastern Alabama. The recent development of this property has brought into the Southern Ore situation a new supply of far reaching consequence. Along the line of the Alabama & Great Southern Railroad are located eight furnaces which have drawn their Ore from the uncertain pockets lying near the edge of the Cambrian measures. For years this source of supply has been used until now the Ore has been depleted, except at great depth and at increased cost. The importance of this development is realized when we recall that during the nineties none of these furnaces made Iron, while those of this district kept at work even when Iron was being sold at low prices. Furnaces based on stratified Ores ran, while those based on pockets could not.

Cleveland.

CLEVELAND, OHIO, August 2, 1904.

Iron Ore.—The figures on the Ore movement for the month of July have not yet been issued. Estimates made by the shippers are that the July movement is about equal to that for the same month a year ago. This will show that the shipments are about 6,000,000 tons behind last year. Assuming that the shipments for the ensuing months will be identical with those a year ago, the total for the year will be about 17,500,000 tons. It is hardly possible that the lake vessels will be able to move more. Cargoes have been hard to obtain. Of late the better tone in the Pig Iron market has eased the strain on the Ore market to a certain extent, but has not lifted the weight altogether. Prices seem to be holding their own.

Pig Iron.—There is a distinctly better tone to the market. The buyers are taking a little more for immediate shipment, but mostly for the future. This situation has caused the producers of Foundry to stiffen their prices a little. It may be said now that \$11.75, in the Valleys, is bottom price for No. 2 Foundry for spot shipment, and that on contracts \$12 is the best that can be done. Some foundrymen have endeavored to buy past the first of the year, but they have been quoted prices which prevented sales. The furnacemen are not disposed to quote so long ahead. Inquiries are in now for thousands of tons to be delivered before the end of the year. There have been reports of cuts in prices, but these, being traced, are found to be of off Iron. There is a report of the closing of a contract for 2500 tons of Basic to a Canton consumer at \$12.35 to \$12.40, delivered, for August and September shipment. The market for Bessemer and Malleable is dull, but hangs around about the price quoted for Basic. Coke prices are easier. Coke of the poorer grades is selling at \$1.80, but the first-class grades are selling at \$2, at the oven. We quote Pig Iron prices, f.o.b. Cleveland, as follows:

Northern Coke, No. 1 Foundry.....	\$13.50 to \$13.75
Northern Coke, No. 2 Foundry.....	13.00 to 13.25
Northern Coke, No. 3 Foundry.....	12.50 to 12.75
Southern Coke, No. 1 Foundry.....	13.35 to 13.60
Southern Coke, No. 2 Foundry.....	12.85 to 13.10
Southern Coke, No. 1 Soft.....	13.35 to 13.60
Southern Coke, No. 2 Soft.....	12.85 to 13.10
Jackson County, 8 per cent. Silicon....	to 16.45
Hanging Rock Charcoal, No. 1.....	to 23.45
Southern Charcoal, No. 1.....	to 17.85
Lake Superior Charcoal.....	15.50 to 16.00

Finished Iron and Steel.—A great deal of bullish talk is heard, but hardly anything concrete backs it up. The market is spotty, and the improvement has gone no definite lengths. In this immediate territory some of the mills of the Republic Iron & Steel Company resumed making Bars a short time ago. They were augmented this morning by the Union Rolling Mill of Cleveland, and will be followed by the Empire Rolling Mill next Monday. These resumption are accompanied by reports of greater activity in the Bar situation, but the activity has been obtained at some cost. Prices have been steadily declining. The quotation now is 1.30c., at the mill for Bar Iron, some, however, quoting 1.30c., Pittsburgh. The Sheet market here seems to be a little weak, being disturbed somewhat by the action of the smaller mills, but their powers are curtailed by their limited scope. No. 27 Black Sheets, as a base, are selling at 2.05c. to 2.10c. for car lots at the mills, while stock quotations have not been changed. There has been a little Rail buying in this territory, but it does not amount to much. Light Rails are still selling in small lots on the low price level occupied for several weeks. There is a little better buying of Structural, but the market has not seen anything in the way of big contracts. The same situation applies to Plates. In short, there is a good healthy midsummer market, but little more.

Old Material.—The Scrap market has continued rather dull, with very little being done. The resumption of activity in some of the mills has caused a little better buying, but there has not been enough of an impetus to keep prices more than fairly steady. The great supply available is a constant bear influence on the market. The prices are continued as follows, all gross tons: Old Steel Rails, \$12; Old Car Wheels, \$11 to \$12; Heavy Melting Steel, \$11. All net tons: Cast Borings, \$4; No. 1 Busheling, \$10 to \$10.50; No. 1 Railroad Wrought, \$11.50 to \$12.50; Wrought Turnings, \$6.50 to \$7; Iron Car Axles, \$16 to \$17; No. 1 Cast, \$10 to \$10.50; Stove Plate, \$7 to \$7.50.

Pittsburgh.

PARK BUILDING, August 3, 1904.—(By Telegraph.)

Pig Iron.—Some heavy sales of Bessemer Pig Iron have been made since our last report, and a good deal of tonnage is still pending. The largest deal closed is that of the Pittsburgh Steel Company, which has purchased 110,000 tons of Standard Bessemer Pig Iron for deliveries running over the next ten months, commencing September. Of this Iron 50,000 tons was bought from the Bessemer Furnace Association, about 25,000 tons from M. A. Hanna & Co., and the balance from outside furnaces. The Iron will be converted into Bessemer Billets by the Republic Iron & Steel Company in its Bessemer plant at Youngstown, and the Billets will be shipped to Monessen, Pa., where the Rod Wire, Wire Nail and Fencing plants of the Pittsburgh Steel Company are located. The price of the Iron is understood to have been \$12 a ton, delivered, at the Bessemer works of the Republic Iron & Steel Company at Youngstown. This is very much the largest single transaction in Pig Iron since the purchases of the United States Steel Corporation in the early part of this year, and is bound to have a good effect on the general market. For several years the Pittsburgh

Steel Company had bought its entire requirements of Billets from the Clairton Steel Company, with the exception of one or two periods, when on account of high prices and scarcity of Billets it imported a large tonnage of German Billets. The company uses from 12,000 to 15,000 tons of Billets a month in its large works at Monessen.

The Wheeling Mold & Foundry Company has also closed for the purchase of 25,000 tons of Standard Bessemer Iron from M. A. Hanna & Co., deliveries running over a long period. This Iron will be made in the firm's Mabel and Claire furnaces at Sharpsville, Pa. Both of these stacks are now idle, but will be started up within a few days, running on this Iron, and also on that sold to the Pittsburgh Steel Company. The Wheeling Mold & Foundry Company is also negotiating for the purchase of 35,000 tons of Foundry and Bessemer Iron, which may be closed up in a few days. We also note a sale of 9000 tons of Bessemer Iron for delivery in last quarter of this year at \$12.10, Valley furnace, also a sale of 4000 tons for same delivery and at same price, and a sale of 7000 tons of Basic Iron for balance of year delivery at \$11.50, Valley furnace. These heavy sales have naturally had the effect of strengthening prices in both Bessemer and Basic Iron, the minimum price of Bessemer for the balance of the year being \$12, at Valley furnace, while Basic is \$11.65 to \$11.75, Valley furnace. A good deal of Foundry Iron is changing hands, and Northern brands of No. 2 are very firm at \$12, Valley furnace, for delivery during the balance of the year, but small lots for prompt shipment can be bought at \$11.65 to \$11.75, Valley furnace. Northern Forge Iron for spot shipment is \$11 to \$11.10, and for the rest of the year delivery is \$11.15 to \$11.25, Valley, or \$12 to \$12.10, Pittsburgh. We note a sale of 1000 tons of Northern Forge Iron for September, October and November delivery at \$12, delivered, Pittsburgh.

Steel.—There is more inquiry for Billets than for some time, while several fair sized lots of Sheet and Tin Bars have been sold recently at regular official prices. We also note several round sales of Billets, but in some cases the competition of outside mills has resulted in sales of Billets being made somewhat under the official price, which is \$23 for both Bessemer and Open Hearth Billets. A sale of about 3500 tons of Open Hearth Billets is reported to have been made by a mill outside the Billet Association on the basis of about \$21, Pittsburgh.

(By Mail.)

We note a heavy inquiry for Bessemer and Foundry Iron, and the tone of the market is very strong. There is a moderate amount of inquiry for Steel, and both Bessemer and Open Hearth Billets continue to be offered by mills outside the association on the basis of about \$21, Pittsburgh. It is understood that in some cases this price has been met by mill in the agreement when necessary to take the business.

In Finished Iron and Steel conditions are moderately active, a good deal of tonnage coming up in Structural Steel, while Plates continue rather quiet. The reduction of 15c. a box in Tin Plate made by the American Sheet & Tin Plate Company, and announced in these columns last week, was something of a surprise to the trade, as it was not expected. There is a fair amount of tonnage in Sheets, but prices are only fairly strong.

Ferromanganese.—We do not hear of any sales and continue to quote English and Domestic Ferro at \$41.50 to \$42 in large lots, delivered. For carloads and smaller lots \$42.50 is quoted.

Muck Bar.—There is more inquiry for Muck Bar, and a sale of 500 tons of Neutral Muck Bar made from all Pig Iron is reported at \$24, Pittsburgh. We quote the market for best grades at that price.

Wire Rods.—Local inquiry for Wire Rods is very light, but some tonnage is being placed in other sections, notably in the West. We quote Bessemer and Open Hearth Rods at \$28 to \$28.50, Pittsburgh.

Skelp.—There is a fair amount of inquiry and the tone of the market is firmer. We quote Grooved Iron Skelp at 1.37½c. to 1.40c., and Sheared at 1.45c. to 1.47½c. Grooved and Sheared Steel Skelp is held at about 1.32½c., Pittsburgh.

Steel Rails.—No large contracts have recently been placed by railroads in this district. It is said that reports recently of large sales of Rails are untrue and arose from the fact that railroads were simply specifying on old contracts. We quote at \$28, at mill, for Standard Sections, the mills equalizing freight. Light Rails continue low in price and are quoted at \$20 and upward, depending on weights.

Structural Material.—Present conditions and outlook in the Structural trade are very much better. A good deal of

bridge work has been placed and more is in sight. The Detroit Southern road has placed a contract for a five-span bridge calling for 2000 tons. The Illinois Central and Cincinnati, Hamilton & Dayton roads are in the market for a large tonnage of bridge work. The contract for the Wabash "Y" has been placed, but the work is held up until rights of way are secured. It calls for about 2500 tons. Excavating is going on for the elevated tracks of the Pennsylvania Railroad on Duquesne way, in this city, and this work, amounting to 10,000 tons or more, will be placed before long. The Seamless Tube Company of America, which will build a Seamless Tube plant at Monessen, is in the market for a Steel building, which will take about 1500 tons. The Mesta Machine Company will build a large extension to its foundry at West Homestead and will erect a large Steel building, taking about 2000 tons. A good deal of smaller work is in sight and is being placed, and the outlook for the Structural trade is better than for some time. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6, 1.60c.; Zees, 1.60c.; Tee, 1.60c.; Steel Bars, 1.60c., half extras, at mill; Universal and Sheared Plates, 1.60c.

Plates.—While actual tonnage being placed in Plates does not show much improvement as yet, the outlook is better, and it is believed the Plate trade will soon show improvement. It is said the Standard Steel Car Company, at Butler, has enough orders for cars on its books to run single turn until the first of the year, and this ought to mean some tonnage in Plates. The leading Plate mills have about enough business to run single turn, but hardly more than that. Official prices are being sustained by the mills in the agreement, but a few outside mills continue to shade prices on sizes up to 60 inches wide. We quote: Tank Plate, ¼-inch thick and up to 100 inches in width, 1.60c., at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, A. B., M. A. and ordinary Fire Box, 1.80c.; Still Bottom, 1.90c.; Locomotive Fire Box, not less than 2.10c., and up to 3c.; Plates over 100 inches to 110 inches in width, not less than 5c. per 100 lbs. extra; Plates over 110 inches to 115 inches wide, not less than 10c. extra; Plates over 120 inches to 125 inches wide, not less than 25c. extra; Plates over 125 inches to 130 inches wide, not less than 50c. extra; Plates over 130 inches wide, not less than \$1 extra; Plates 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. Above prices are on carload lots, f.o.b. at mill, Pittsburgh, with 5c. extra for less than carload lots; terms, net cash in 30 days, and for all points of delivery in the United States except the Pacific Coast.

Sheets.—General conditions in the Sheet trade are showing some betterment, but not to the extent that could be desired. The reduction in price of Tin Plate has caused some uneasiness in Sheets, due to the belief that a reduction in prices might be made, but this is hardly probable, as Sheets have been very low for a long time, and to Sheet mills that have to buy Bars in the open market and pay official prices for them, present prices of Sheets do not allow much profit, if any. We quote: No. 26 Black Sheets, box annealed, one pass through cold rolls, 1.95c.; No. 27, 2c.; No. 28, 2.10c. For very desirable specifications some mills might shade these prices about \$1 a ton. Galvanized Sheets are selling at about 80 and 7½ per cent. off. In net prices this discount figures out as follows: Nos. 22 and 24 Galvanized Sheets, 2.59c.; Nos. 25 and 26, 2.77c.; No. 27, 2.96c., and No. 28, 3.14c. All above prices are for carload and larger lots, jobbers charging the usual advances for small lots from store.

Iron and Steel Bars.—The general feeling in the Bar trade is better, demand being a little more brisk, while specifications are coming in quite freely. Most large consumers covered ahead before the price was advanced and are taking out Bars on these contracts promptly. Demand for Iron Bars is a little better, but they continue to be sold at prices slightly lower than for Steel Bars. We quote Refined Iron Bars at 1.30c., Pittsburgh, but on Bars made partly from Scrap this price might be shaded about \$1 a ton. We quote Steel Bars at 1.35c., Pittsburgh, in carloads and larger lots, with the usual differential for less than carloads. On Open Hearth Bars \$1 a ton advance is charged.

Spikes.—Nothing of interest to note, and we quote Spikes at \$1.60 per 100 lbs., f.o.b. Pittsburgh, for less than carload lots. For carloads and larger lots \$1.55 per 100 lbs. is named.

Hoops and Bands.—A fair amount of new tonnage is being placed in Hoops and Bands, but the mills are running mostly on specifications on contracts placed some time ago. We quote Steel Hoops at 1.55c. and Bands at 1.35c., extras as per Steel card.

Merchant Pipe.—Tonnage in the Pipe trade is keeping up quite well, the leading mills having a good many orders on their books, while inquiries are heavy. The recent reduction in price of Oil by the Standard Oil Company has rather discouraged the building of new Pipe lines, and business of this character is light. We are advised that prices are being well maintained, discounts to consumers in carloads being as follows:

Merchant Pipe.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
	Per cent.	Per cent.	Per cent.	Per cent.
1/4, 1/2 and 3/4 inch.....	70	55	69	54
1/2 inch.....	73	68	72	62
3/4 to 1 inch.....	78 1/2	68 1/2	77 1/2	67 1/2
1 to 2 inches.....	77	67	76	66
2 to 3 inches.....	72 1/2	57	71 1/2	56
3 1/2 to 6 inches.....				
7 to 12 inches.....	69	59	68	58
Extra strong, plain ends, 1/2 to 8 inches.....				
Double extra strong, plain ends, 1/2 to 8 inches.....	60	50	58	46

Boiler Tubes.—New tonnage in Boiler Tubes is light, the railroads, which are the leading consumers, buying very sparingly. It is said prices are being well maintained.

Boiler Tubes.

	Steel.	Iron.
1 to 1 1/2 inches.....	48	43
1 1/2 to 2 1/4 inches.....	60	43
2 1/4 to 3 inches.....	62	48
3 to 5 inches.....	68	55
6 to 13 inches.....	60	43

In carload lots discounts are two points lower than the above.

Merchant Steel.—A number of the leading agricultural implement makers have placed contracts for their requirements up to July of next year, but a good many concerns have not yet bought. It is understood that prices on these contracts are guaranteed against decline. Demand for Shafting is fairly active. At the meeting of the Shafting Association recently discounts for delivery in the Pacific Coast States, which include California, Oregon and Washington, were reduced from 52 per cent. to 52 and 5 per cent. off. We quote: Plow Slabs, 3/4 inch and heavier, 1.60c.; Tire Steel, 1.55c. to 1.60c.; Sleigh Shoe, flat, 1.40c. to 1.45c.; Cutter Shoes, 2.05c. to 2.10c.; Plow Steel, 6 inches and under, 1.35c.; Toe Calk Steel, 1.85c. to 1.90c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. Shafting is 52 per cent. off in carloads and 47 per cent. in less than carloads, delivered.

Spelter.—Prices of Spelter are weak and demand is quiet. We quote prime Western grades at 4.72 1/2c., Pittsburgh, but this price would probably be shaded on a firm offer for spot shipment.

Tin Plate.—The reduction of 15c. a box on Tin Plate announced last week by the American Sheet & Tin Plate Company brings the price of 100-lb. Coke Terns down to \$3.25, f.o.b. Pittsburgh, while the rate of discount for cash was increased from 1 per cent. to 2 per cent. It is understood that the reduction on Terne Plates was slightly heavier than on Bright Plates.

Coke.—The outlook for the Coke trade is improved, a number of idle blast furnaces being gotten ready to start up. These include the two Shoenberger stacks in Pittsburgh, Mable and Claire in Sharpsville, and several other furnaces. Inquiries are in the market for a large tonnage of Furnace Coke for delivery during the next two years or more, to cover contracts on Pig Iron for the New York tunnel castings. Standard Connellsville Furnace Coke is held at \$1.45 to \$1.50, and 72-hour Foundry at \$1.75 to \$1.85, at oven. Outside makes of Coke, not as high in quality as Connellsville, are being offered at \$1.25 to \$1.35 a ton, and Foundry about \$1.60 a ton, at oven. Output of Coke in the Upper and Lower Connellsville regions last week was about 175,000 tons. The Frick Coke Company will rush work on the buildings of 1000 new ovens in the old Connellsville region, the new ovens to be erected to keep the supply of Coke of the Frick Coke Company at the present rate of output, allowance being made for the abandonment of some ovens in the next few years. The supply of water in the Coke regions this year has been plentiful, permitting all the Coke plants to run as full as demand for Coke would warrant.

Iron and Steel Scrap.—As noted last week, conditions in the Scrap trade are showing some improvement, inquiries for material being larger, while prices are also better. We quote: Heavy Melting Scrap, \$11 to \$11.50; Steel Turnings, \$7.50 to \$7.75; Cupola Scrap, \$10.50 to \$10.75; Cast Iron Borings, \$5 to \$5.50, and Bundled Sheet Scrap, \$8, all in gross tons. No. 1 Wrought Scrap continues very dull, and is quoted at about \$10.50 in net tons by local dealers.

The Pittsburgh office of F. R. Phillips & Sons Company, Room 518, Park Building, Pittsburgh, dealers in Rolling Mill Machinery, Iron, Steel and Coal, is now in charge of W. Perry Lemley. Owing to the death of F. R. Phillips, Sr., F. Rees Phillips, who was formerly in charge of the Pittsburgh office, is now manager of the Philadelphia office, while W. Vernon Phillips, formerly in charge of the Philadelphia office, has gone to London, England, to manage that office.

W. R. Beatty, formerly general superintendent of the works of the New Castle Forge & Bolt Company, New Castle, Pa., has resigned, and has entered into partnership with William Ward, House Building, Pittsburgh, to deal in second hand machinery of all kinds, under the firm name of Beatty & Ward.

Cincinnati Machinery Market.

CINCINNATI, OHIO, July 30, 1904.

According to reports received from the various machine tool builders of this city, a much better feeling obtains and trade conditions are in better shape, prospectively, than for several months past. Inquiry, both foreign and domestic, is much better, and seems to be more direct and to the point. May and June were above the average in orders booked, and July to date will compare favorably with the same month last year. Foreign trade with several of our shops is quite considerable, and they have been called on to do a large amount of figuring on tools for export, but in several instances have failed to secure the contract. Several weeks since agents of the Japanese Government forwarded an inquiry for a large consignment of tools, asking for bids from firms in this city, at the same time stating that, on account of the diplomatic and friendly relations existing between that country and England, the latter country would be given the preference, all things else being equal. It is, perhaps, needless to say that the tools furnished were not of American manufacture. The matter of stability in prices is becoming quite an important factor, and we learn that considerable shading is being done in this line.

The railroads are branching out in several directions, and are gradually coming into the market for a line of supplies. The Erie and Pennsylvania have recently placed orders for a complement of tools, and some of our local manufacturers have been fortunate enough to come in on the deal. Since the consolidation of the Cincinnati, Housatonic & Delaware and Pere Marquette roads, it is understood the new management contemplate an expansion and enlargement of their shops. During the past week a number of machine tool men made an inspection of this company's shops at Lima, Ohio, with a view to placing added equipment thereto. We learn that they will soon be in the market for a full line of new tools to better enable them to carry on the heavy traffic that is promised through their important feeders. Structural iron men report only a moderate demand, most of their contracts being for light tonnage work. The iron girders for the new water works plant are being hurried, and the structure is fast assuming shape. Foundrymen say that the outlook for new work is good, and they are anticipating handling considerable tonnage within a short time. To sum up the situation, we might say that inquiry is better, prospective buyers are sincere in their requests for prices, the labor situation as regards employer and employee is satisfactory and the general tone of the market is better and needs but time to fully develop it.

The Lodge & Shipley Machine Tool Company is doing a good business both at home and abroad, being especially well pleased with the manner with which export trade has developed. The company last week received a large order from the United States Government for a number of its electrically driven lathes, for use on one of the new battle ships now under construction, also quite a large order for shipment to Cuba.

The new plant of the Cincinnati Machine Tool Company is practically finished, and the equipment is gradually being placed in position. This structure is well lighted and well ventilated, and will greatly facilitate the handling of its trade. The new I. & E. Grenwald engine is being installed, and the final removal to the new quarters will be effected within the next ten days. Trade is reported as only fair with a general line of inquiry that it is expected will be productive of good results.

The Rahn-Mayer-Carpenter Company is working full time, and says that sales are somewhat better than they were a month since. Inquiries having the true ring are more frequent, and the general situation is more satisfactory. Export trade is increasing, and a carload of lathes for foreign points was shipped during the last week.

The R. K. Le Blond Machine Tool Company says that the month of July to date is quite a little in excess of the preceding month, and June compared favorably with that month last year. An order has been booked from Mexico for a large lathe, one from Kobe, Japan, one from Hong Kong and one from Calcutta for lathes and milling machines. An especially large trade is reported with Eastern cities for direct motor driven lathes and milling machines. The company is making a special feature of its exhibit of lathes and milling machines at the St. Louis Exposition.

The I. & E. Greenwald Company's experience is that prices are holding firm, and inquiries are very much better. The gear trade is quite active, with the demand on the increase. The company is now installing one of its 16 x 42 inch belted engines in the new plant of the Cincinnati Machine Tool Company on Spring Grove avenue, and one of its 12 and 24 x

36 inch cross compound engines at the American Book Company's new plant on Fourth street, and is shipping an 18 x 42 inch rope drive engine for a rice plantation in Texas.

The Blymyer Mfg. Company reports trade with Mexico still keeping up, and that foreign inquiry in general is of the best. The company has just received from the hands of the printer a new catalogue in the Spanish language, complete in all its details, and intended for distribution among our Spanish possessions.

The Bickford Drill & Tool Company says that trade has fallen off somewhat within the past month. Direct inquiries, however, are more frequent, and the general pulse of trade is beating stronger. The railroads are slowly coming to the front as purchasers, and are greatly aiding the work of revival.

"We are handling from 25 to 30 tons per day" is the report of the Bollman-Wilson Foundry Company. Most of this is for outside points, local business being very light. There seem to be plenty of prospective buyers, but it is hard to bring them to the sticking point.

The Philadelphia Machinery Market.

PHILADELPHIA, PA., August 1, 1904.

Conditions in the Philadelphia machinery market during the past month have varied but little from those of its predecessor. In some lines there is a better undertone, but little has yet developed as regards new engagements. The volume of business, on the whole, has been small. In several lines, however, there has been quite an influx of new business, notably in conveying machinery, for which several good contracts have been closed. These exceptions have aided in giving a better feeling to the market, and opinions are reaffirmed as to the ultimate return to more prosperous conditions.

July, as a rule, is one of the duller months of the year, and the past month has been no exception. With many manufacturers of machinery and tools present conditions are but slightly removed from a temporary shutdown, which in some cases would have occurred before this were it not considered best to keep the shop organization intact.

Curtailments continue, working forces are reduced to the lowest notch, and in some cases reduced forces are also working shorter hours. August is hardly expected to produce much new business, as the vacation period usually extends over that month and business, unless urgent, is generally postponed.

The crop situation and the position held by the Presidential candidates will probably dominate the turn of affairs during September and October, and on the whole it is rather uncertain to figure out any pronounced renewal of activity before the fall months, and more than likely before the first of next year, as buyers are rather inclined to postpone any expenditure unless absolutely needed during the remainder of this year.

Inquiries are coming in irregularly, and in many cases are simply made to get a line of probable cost of equipment. Some good specifications from railroads are out, but the business closed is only a fraction of the requirements. There are also good inquiries for pneumatic tools and machinery, and these are more than likely to develop into orders at an early date. Inquiries for special tools are probably more plentiful and lead up to orders more promptly than anything in the standard lines of goods.

There is little difference in the degree of activity in the various local and nearby plants. All could take on additional business; a few are fairly busy, but by far the greater number are more or less dull. The large manufacturing plants feel the inactivity to a greater extent than the smaller ones, which only require a few running orders to keep in operation.

Deliveries on all lines of goods can be had promptly, either from the manufacturers or from dealers' stock. The former can furnish both heavy and light tools with equal promptness, and special tools can be supplied without extended delay, as no trouble would be experienced in starting work or obtaining special parts needed in construction.

The foreign demand for pneumatic tools and machinery continues to improve, and some nice specifications are before manufacturers of these lines. Molding machines for foundry practice have also been in increased demand, but general tools and machinery continue weak and inactive. In some cases where regular export shipments are made the volume has decreased, in others it remains stationary.

Castings, both iron and steel, can be had promptly. This branch of the trade is very quiet, particularly in the gray iron field. Steel casting foundries are probably in a little better shape, but almost all would be able to handle more business. Some gray iron foundries are running but three or four heats a week; others run daily heats, but at a reduced tonnage. Prices for general castings vary, subject to how badly the work is needed. On castings subject to specifications, however, quotations remain firm.

Machinery and machine tool dealers have had a variable month. There has been no regularity about the demand, and the total varies but little when compared with that for the month of June. Some note a slight improvement, others a slight decline, in total sales. A better feeling, however, exists and prospective buyers seem to take hold more actively. A few good sales have been made, including a large and heavy tool here and there, which in some cases has brought totals to a fair volume for the month.

The smaller engine and boiler manufacturers report a dull month. Inquiries are only fair and the number of orders received is not flattering. Machine shop supplies are dull, reflecting the general condition of the trade.

Prices are more or less uncertain. Some dealers and manufacturers contend that they are being maintained, while in other circles there are evidences of considerable cutting. Competition and large stocks are factors toward lower prices and buyers are inclined to hold for concessions, which in many cases are granted.

The Schutte & Koerting Company has purchased property 78 feet by 86 feet 11 inches, adjoining its present plant at Twelfth and Thompson streets, which it intends using for manufacturing purposes. Business with this company, we are advised, keeps up fairly well, there being a good demand for most of its specialties.

The Midvale Steel Company is making progress with the various improvements now under construction, and it is said that it will begin the manufacture of armor plate for the Government contract early next year. Additional orders from the Government, covering \$500,000 worth of gun carriage forgings, have recently been taken and most all departments of the plant are busy.

The Belmont Iron Works has decided to erect a new plant for the construction of structural iron work, &c., at Eddystone, Pa., where 10 acres of ground have been purchased. It is not the intention of the company to abandon the local plant, but it will be used for the lighter class of work, the handling of heavier work being a feature of the new plant. The contract for foundations for the main buildings has been let, while the structural work will be done by the company. Contracts for most of the machinery needed have been let. It is the intention to rush the work of building so that the new plant will be completed before the end of the year.

The Otto Gas Engine Company is fairly busy. There is a more or less active demand for gas engines and some good orders have recently been taken, including one for 13 engines of 160 horse-power each for submarine boat service for the Holland Submarine Torpedo Boat Company. The Otto Company has recently purchased some 57 acres of ground, situated largely on the Christiana River at Wilmington, Del., at which place it is contemplated to erect a new plant for the manufacture of gas engines. Plans as to just what will be done have not been completed.

The Espen-Lucas Machine Works continues fairly busy. While the past month has not been any better than its predecessor, a number of orders have been received. Among recent deliveries were a 40-inch inserted tooth type ingot saw for a Pennsylvania steel plant and a 12,000-pound steel foundry cold saw with 13-inch saw for a Northern Pennsylvania steel casting plant. A number of smaller saws have also been delivered local and nearby parties.

The Falkenau-Sinclair Machine Company has had a fair month's business. Some very nice work has been bid on and it is expected that conditions in the early future will be materially improved. Deliveries by this company during the past month include shipments of a rubber testing machine for the Brooklyn Navy Yard for the Government, a heavy special toggle press for New Jersey parties and a number of standard presses for New England and nearby delivery. A special hydraulic locomotive bushing press is also about ready for delivery to the Southern Railway Company.

The Standard Pressed Steel Company is now prepared to furnish its American Pioneer pressed steel shaft hanger in sizes for 1 3-16, 1 7-16, 1 11-16, 1 15-16, 2 3-16, 2 7-16 and 2 11-16 inch shafting. Hangers for the larger sizes of shafting are in course of manufacture. The company has established a number of new agencies in various parts of the country and advises us that business conditions are quite favorable.

H. B. Underwood & Co. continue busy. They have received a number of good orders from various railroads, as

well as other concerns, for their line of specialty railway shop repair tools. In the line of general machine work they have during the past month been quite active. Deliveries made recently include shipments of portable valve seat rotary planing machines, portable crank pin turning machines and other special tools to Southern, Eastern and Central Western railroads.

The Philadelphia Roll & Machine Company has had a fair month's business, particularly in the line of sand and chilled rolls, which have been in good demand. Orders have been taken for some very heavy chilled rolls, as well as ordinary weights of both classes. The demand for tin plate mills and general machinery, however, is not so strong. Deliveries of rolls have been made recently to many of the local and nearby rolling mill plants.

The American Pulley Company has not found the past month any improvement over June in the way of new business. Buyers are still taking pulleys only as they need them and stocks carried by them are extremely light. The number of orders received are about as usual, but the quantity specified is considerably reduced. The foreign demand has not improved. Exportations continue to Australia, New Zealand and Continental countries. Domestic deliveries, both for the Southwest and nearby, are unchanged.

The Philadelphia Pneumatic Tool Company continues busy. There has been a good number of orders booked during the past month, both from foreign and domestic sources. Germany leads in the demand from abroad, followed in order by France and England. The domestic foundries are making good inquiry regarding pneumatic rammers and a number of sales have resulted. Considerable new business is said to be in sight and prospective conditions are good. Deliveries recently made include 26 tools, hammers and riveters for the Brooklyn Navy Yard.

The Thomas H. Dallett Company, Incorporated, has had a fair month, pneumatic stone dressing tools being in the greatest demand. There are good prospects for some increased business in this line abroad, particularly in England. While business in their other lines of tools has been more or less quiet, some good orders are in sight and conditions generally appear to be more favorable.

The Link-Belt Engineering Company has taken a very nice lot of business during the past month, and will be busy in all departments for some time. Besides some large contracts, there has been a good demand for medium sized work and general orders have been quite up to the average. Orders for coal storage plants taken recently include one of 480,000 tons capacity for the Philadelphia & Reading Railway Company, to be located at Abrams, Pa., and one of 170,000 tons capacity for the Pennsylvania Railroad Company, as an extension to its present plant at McClellan, Pa. Orders are also on hand to furnish and equip chutes for the Holidaysburg, Pa., and St. Marys, Pa., coal piers for the Pennsylvania Railroad. A coal handling and storage plant is under construction for the Watertown Gas Light Company, Watertown, Pa., as is also a 200-ton coaling station for the Buffalo, Rochester & Pittsburgh Railroad, to be located at Butler Junction, Pa.

The Eynon & Evans Mfg. Company notes an improvement in the demand for patterns and for general machine work, these two departments having increased work over that of last month. The company still keeps busy in the foundry and has taken additional orders for some heavy bronze and brass castings. Among other orders was one for 60 steam jet blowers for a large steel concern. Work on the addition to the foundry progresses favorably, and it is expected that it will be ready for occupancy at an early date.

The Tabor Mfg. Company has had a good month. The demand, both foreign and domestic, keeps up well and actual orders for molding machines received are well ahead of shipments. England has been an active market during the past month, recent orders including a number of 13 x 20 inch power ramming split pattern machines for export to different concerns. Orders have also been taken for molding ma-

chines, with full pattern equipment, for the Remington Typewriter Company, Illion, N. Y. The demand for Taylor-Newbold cold saws, manufactured by the Tabor Company, is good and sales are said to be steadily increasing. A number have been shipped various concerns, and duplicate orders have been received from the Standard Steel Works, Burnham, Pa.

The Energy Elevator Company reports a slight falling off in the demand for elevators and hoists, which, however, is not unexpected at this season of the year. This company has a large amount of work on hand and continues operating all departments on full time. It has recently delivered to Martinsburg, W. Va., parties a specially designed hoist, to be used in raising the doors of a new church under construction there; this feature does away with hinged or sliding doors. Repeat orders for the third hoist for Derby Line, Vermont, and for Grand Rapids, Mich., are to be noted, as is also an order for three lifts to be installed in the Atlanta Terminal Station, Atlanta, Ga. Two ornamental dumb waiters are being installed in the new restaurant of Hanscom Bros. in this city, while deliveries to Bryn Athyn, Pa.; Morgantown, Ky.; Summit, N. J.; Red Lion, Pa.; Tripp, S. D., and Buffalo, N. Y., have also been made.

The Baldwin Locomotive Works is only moderately active. While the past month has not been productive of any very large orders, one for 15 balanced compound engines of the passenger type was received from the Atchinson, Topeka & Santa Fé Railroad, this being in addition to the former order for 39 engines. The outlook for business is considered somewhat more favorable as conditions in some lines have become more settled, and it is expected that new business will develop in the near future. Individual orders from various concerns are being booked, but nothing of interest can be said regarding the foreign demand. The working forces, in view of the inactivity in the trade, have been largely reduced. In some cases mechanics have been laid off, while in others the working hours have been diminished.

Chicago Machinery Market.

CHICAGO, ILL., July 30, 1904.

Builders of power, heating and lighting equipments and such other machinery and tools as go into large manufacturing and mercantile buildings, along with architects and engineers, have had to add considerably to their working force, particularly in the drafting departments. This is due to the increased inquiry for figures on city office buildings and warehouses and manufacturing buildings in or near the city. Much of this business will never go further than the blue print frame, but an encouraging percentage is finding its way into order books. The general machinery business, particularly heavy tools for metal working, is still quiet. The shipbuilding ways and dry docks are empty, with no prospect for filling them until the tonnage of lake shipping shall catch up with the excessive tonnage of vessels constructed during the boom times of two and three years ago. Railroads are thought to be a little more liberal in their purchase of machinery and cars than they have been for some months. The prospect of moving a large grain crop this fall and winter is responsible for this movement, but it will be several weeks before the corn crop is sufficiently assured to induce the corn belt roads to spend the money necessary to put their equipment in shape to handle this business satisfactorily.

Large Office Buildings.

The table published below gives an idea of contracts pending or completed on large structures which are nearing completion or which have been newly undertaken.

Building or owner.	Architect.	Contractor.	Tons steel.	Steel mill.	Boilers.	Engines.
First National Bank.....	D. H. Burnham & Co.	C. Volkman.....	5,000.....	American Bridge Co.	Stirling.....	Ball.
Otto Young.....	D. H. Burnham & Co.	Thompson-Starrett Co.	4,000.....	American Bridge Co.	Babcock & Wilcox.....	
Thomas orchestral.....	D. H. Burnham & Co.	Thompson-Starrett Co.	1,200.....	American Bridge Co.		
Field warehouse.....	D. H. Burnham & Co.		5,000.....	American Bridge Co.		
Union League addition.....	D. H. Burnham & Co.					
Henry Strong.....	Holabird & Roche.	Wells Brothers.....	2,500.....	American Bridge Co.	Kewanee.....	Edison circuit.
Chicago Savings Bank.....	Holabird & Roche.	Wells Brothers.....	1,500.....	American Bridge Co.	Stirling.....	Edison circuit.
McNell.....	Holabird & Roche.	Geo. A. Fuller Co.....				
Martin A. Ryerson.....	Holabird & Roche.	Wells Brothers.....	1,300.....	American Bridge Co.		
Chas. W. Rector.....	Jarvis Hunt.....	Geo. A. Fuller Co.....	1,500.....	Carnegie Steel Co.		
Chicago & Northwest'n. Frost & Granger.....	Geo. A. Fuller Co.		4,000.....	American Bridge Co.	Caball.....	Ames.
Lehman Theater.....	E. R. Krause.....		1,500.....			
Paper Mills Co.....	George L. Harvey.....	American Bridge Co.	700.....	American Bridge Co.		
James A. Patten.....	C. A. Eckstorm.....	Hansell-Ellcock Co.	1,400.....	Carnegie Steel Co.	Tubular.....	

* Power and heat to be supplied from adjacent buildings.

chines for export to Australia, these being the same type machines as above mentioned, although larger in size. The malleable and gray iron foundries lead in the domestic demand at this time. Among recent deliveries of molding machines were eight vibrator frame power ramming ma-

In addition to the structures indicated in the table, the following are proposed but are not yet in a sufficiently advanced stage to permit the publication of details:

The Northern Trust Company, of which Byron L. Smith is president, proposes the erection of a huge office building

at the northwest corner of Monroe and La Salle streets, on the site now occupied by the Bryan Block. This building will cost approximately \$1,500,000. Frost & Granger will doubtless be the supervising architects, with Shepley, Rutan & Coolidge consulting architects.

The Illinois Tunnel Company purposes the erection of an immense terminal station and storage warehouse at Taylor street and the Chicago River, with a central power station in connection, but the company is not yet ready to make any announcement as to its plans and it is not known what firm of architects, if any, has been selected.

Victor Lawson, publisher of the *Chicago Daily News*, is understood to contemplate the erection of a large building at the northeast corner of Madison street and Fifth avenue, the building to be used partially for newspaper purposes and partially for rental. As far as known, the architect has not been selected and the matter is still on paper.

Stumper, Rosenthal & Eckstein are planning the erection of a steel mercantile building at State street and Jackson boulevard, preliminary sketches or plans of which have been drawn by Holabird & Roche.

Wm. F. Grower, who put up the electrical building on West Jackson boulevard, is now excavating at the eastern terminus of the Madison street bridge for the purpose of erecting thereon a mercantile building to cost \$250,000. Frank J. E. Braband, 79 Dearborn street, is the architect.

Carson, Pirie, Scott & Co., the wholesale dry goods firm, more than a year ago bought a tract of land along the Chicago River for the erection of a warehouse, but nothing further has been done toward the construction of this building as far as can be learned.

Albert Dickinson & Co., seedsmen, purpose the erection of a large seed warehouse at South Chicago, but they state that matters are still too embryonic for publication.

The George A. Fuller Company is understood to have the steel contract, and possibly the general contract, for the Woman's Athletic Club, but they state that it is too early to give the matter publicity.

The Racquet Club is the name of the new business and social club to be conducted on the lines of the Chicago Athletic Club, which will erect a building on Madison street, near the corner of Michigan avenue, and running back to the rear of the Chicago Athletic Club, the intention of the builders being to lease part of their space to the latter club. D. H. Burnham & Co. are credited with being the architects, although it is too early to make definite announcement.

The Metropolitan Elevated Railroad is building a depot and office building on Fifth avenue, south of Adams street, two floors of which will be a depot and the upper floors used for commercial purposes. Wm. Grace & Co., Chicago, are general contractors. Frost & Granger are architects for the depot portion of the building.

The Western Electric Company is actively pushing the construction of its great plant near Hawthorne. It is understood that the plant involves an expenditure of more than \$6,000,000.

The city of Chicago has received and is now considering bids on the equipment for a large electrical power station to be erected near the Fullerton avenue bridge. No awards have yet been made. E. B. Ellicott is chief of the electrical division. City Engineer Ericson will ask bids shortly on four 250 horse-power boilers for the Lake View pumping station. Other things being equal, internally fired boilers and Hawley down draft furnaces will probably be adopted, as they are in use in all the new city plants.

The Elgin National Watch Company, at Elgin, Ill., is practically rebuilding its plant. About 2400 horse-power in boilers and engines will be required.

The Preble Machine Works, now at 9035 South Chicago avenue, Chicago, has begun the erection of a new machine shop and foundry, located on the Pennsylvania lines, at 106th street and Indianapolis avenue, just across the State line of Indiana and Illinois. The building will be of steel and brick construction and will cover approximately 225 x 120 feet. Contracts for machinery equipment have been let, as follows: Two 66 x 16 high pressure boilers, one 14 x 21 (150 horse-power) four-valve engine, one 200 horse-power feed water heater, pump, smokestack, connection, &c., to be furnished by the Erie City Iron Works; one Franklin single steam driven air compressor and one air receiver, supplied by the Chicago Pneumatic Tool Company; one 62½-kw. generator and one 25 horse-power motor for blower, furnished by the Bullock Electric Mfg. Company; one 100-ton railroad track scale will be furnished by the Standard Scale & Supply Company; one electric traveling crane of 12½ tons capacity, a new cupola, pneumatic elevator, complete core oven fittings and Root blower will be furnished by the Whiting Foundry & Equipment Company. A heating system, not yet contracted for, will be installed later and some additional machinery will be purchased for the machine shop. It is planned to have the building ready for occupancy about December 1. W. M. Crilly is the contractor.

J. G. O'Neil, consulting engineer, Chicago, has sold to the Meyercord Company one 125 horse-power Scotch boiler, with Morrison corrugated furnace, and one 200 horse-power

boiler of the same type to Munger's Laundry, both boilers being manufactured by S. Freeman & Sons, Racine, Wis. C. K. Sherman sold for the Springfield Boiler & Mfg. Company, Springfield, Ill., two 172 horse-power boilers of the same type to the Michigan Agricultural College, near Lansing.

Thomas R. Kimball, 503 McCague Building, Omaha, is asking for bids, to be opened August 20, for the heating, ventilating, plumbing, water supply, fire protection, wiring and elevators for the Battle Mountain Sanitarium, Hot Springs, S. D. This sanitarium is one that is being built by the Government as a home for disabled veteran soldiers. Plans and specifications can be seen at the office of Mr. Kimball, as well as at the home at Hot Springs and also at the following points: Builders' Exchange, St. Paul, Minn.; Builders' and Traders' Exchange, Chamber of Commerce Building, Chicago; Master Builders' Association, Continental Building, Denver, Col.; Major Moses Harris, 942 New York Life Building, New York.

The New York Machinery Market.

NEW YORK, August 3, 1904.

No important contracts are reported closed by either of the builders of the North and East River tunnels of the Pennsylvania Railroad during the past week. It is expected, however, that the O'Rourke Company will contract this week for the steel castings, driving shields and the boilers for the power stations. There will be required about 3200 horse-power of boilers.

It is announced that the O'Rourke Engineering Construction Company, New York, will move its offices within a few days from 26 Nassau street to the Century Building, 1 West Thirty-fourth street, where it will occupy the entire tenth floor. Since work on the North River tunnel has been begun by the O'Rourke Company it has found the present quarters entirely too small, and considerable inconvenience has been caused by being so far from the point of operations. In the new location the company will be near to the work, which it can direct more conveniently, and will have the increased floor space which is necessary to accommodate the large office force and engineering staff.

To the machinery trade in general probably the most important occurrence of the week was the letting of the contract for its new plant at St. Johns, P. Q., Canada, by the Singer Mfg. Company, New York. The company has at times in the past been large purchasers of machine tools and will in the near future be in the market again for a great deal of equipment. At this writing we are not informed as to how much progress has been made toward completing the specifications for the machinery, work on which, we understand, was started some time ago. While the company will build the special machinery at one of its own plants, this will be only a small portion of the amount required for equipping the new works. The plans, which were prepared at the company's works at South Bend, Ind., call for the erection of 22 buildings, of which number James Steward & Co., 135 Broadway, New York, received the contract for the construction of 14, including all the mechanical shops with the exception of the power plant. The plant will cover nearly 40 acres and will be located about 27 miles from Montreal. There will be two buildings, six stories high and similar in construction, one the machinery building, 60 x 600 feet, and the other the cabinet building, 60 x 750 feet. The other buildings include a storage, grinding and rumbling building, 60 x 200 feet; foundry, 100 x 400 feet, with two wings, one 40 x 70 feet and one 34 x 60 feet, used as cupola and core room, respectively; foundry shed, 75 x 200 feet; japanning building, 60 x 150 feet; forge shop, 60 x 150 feet; forge shed, 40 x 150 feet; veneer cutting and trimming building, 75 x 150 feet; veneer drying building, 40 x 75 feet; veneer storage building, 75 x 100 feet; power house, 150 x 150 feet; dry lumber shed, 80 x 100 feet; shipping building, 80 x 300 feet; pattern storage house, 60 x 60 feet; log house, 75 x 75 feet; oil house, 60 x 60 feet; dry kilns, 45 x 52 feet, and office building, 50 x 60 feet. The construction and equipment of the plant is in the hands of E. H. Bennett, vice-president, who makes his headquarters at the works at Elizabethport, N. J.

Work on the plans and specifications for New York's high pressure salt water fire protection systems is well under way, and unless something unforeseen happens the mains will be available for service within a year's time. The first system will be installed at Coney Island, which has never had adequate fire protection. The pumping station for that district will be located at Neptune avenue and West Twelfth street and will be equipped with from 450 to 525 horse-power of gas engines, divided into three units and direct connected to triplex plunger pumps. The specifications for the equipment of this plant will be sent out for bids some time this week. Owing to the large number of obstacles to overcome, the preparation of specifications for the pumping stations to be located in Manhattan Borough has been rather slow, the engineer having decided to leave that part of the scheme until the more difficult work of making surveys,

borings and laying out the courses of the mains shall have been completed. A force of men is now out on the latter work, and the only detail of the pumping plants thus far decided upon is the use of electric pumps. It is expected, however, that specifications will be ready in about six weeks. In Brooklyn the pumping end of the project is much further advanced and in about five or six weeks bids will be asked for the machinery. The Brooklyn system will serve the entire water front and will contain two pumping stations, which will be equipped with multistage centrifugal pumps, driven by induction motors, using the Edison current. The main station, which will be located at Joralemon and Furman streets, will be of 3750 horse-power capacity, divided into five units, and the other station, which will be erected at Willoughby and St. Edwards streets, will be of 2250 horse-power capacity, divided into three units. For the three systems there will be required a large tonnage of cast iron pipe, special steel castings and other accessories.

The Niles-Bement-Pond Company, New York, was successful in securing the bulk of the orders for the equipment of the new shops of the Atchison, Topeka & Santa Fé Railroad at Albuquerque, N. M., including the drive wheel lathe, car wheel lathe and all the shop lathes 24-inch and larger. The company also took the order for all the planers specified and for the boring mill. In addition to the orders received by this company for the La Junta, Cal., shops published in our issue of June 16, it also has item 524, a 3-ton, three-motor electric traveling crane, 68½ foot span; item 525, a 20-ton, three-motor electric traveling crane, 46½ foot span; item 527, drive wheel lathe, 7 and 9 inch swing.

In addition to the 19 cranes for which the Pennsylvania Steel Company, Steelton, Pa., received bids last month, there will be required some special chord boring machines and a number of additional punches for equipping the extensions to the bridge department. The cranes not yet secured range in capacity from 2 to 60 tons, four of them being of the overhead electric traveling type and 15 of a special traveling wall jib type. The additions to the bridge plant now under way consist of one building, 160 x 190 feet; a second building, 128 x 460 feet, and a third building, 100 x 120 feet, together with several small, subsidiary buildings. The contract for the heating apparatus has been let to the B. F. Sturtevant Company, Boston, Mass. The improvements are in the hands of J. V. W. Reynders, superintendent of the bridge and construction department.

The time is fast approaching when work will be started upon another great engineering project which will require a large quantity of mechanical apparatus. This is none other than the enlargement of the Erie Canal, the work on which was authorized at the last New York State election, and the engineering commissioners to carry out which were shortly thereafter appointed. We understand that the specifications for the work have been completed and that they will soon be sent to contractors for estimates. It was the original intention of State Engineer Bond, who is chairman of the Canal Commission, to select five critical points as test works, the idea being that if bids for these works are within the estimates it will show that the work can be done within the estimated cost. The five points chosen are Cohoes, Little Falls, Rochester, Lockport and Newark. Whether this scheme is to be carried out will not be known until the specifications are issued and it can be ascertained just what work they cover. The main point in all undertakings of this character is to get things moving, and it looks very much now as if a start would be made very shortly.

The Ingersoll-Sergeant Drill Company, Easton, Pa., which lately secured the contract from the O'Rourke Engineering Construction Company, New York, for eight Corliss air compressors for the North River tunnel work, is now completing its large new works at Phillipsburg, N. J., and will soon take under consideration the question of equipment. We are officially informed that at the present time the specifications are not perfected, and may not be for some time to come.

Machinery is being purchased by the Geiser Mfg. Company, Waynesboro, Pa., for its plant at Greencastle, and among the tools for which the company has requisitions out is a 30 x 30 inch by 8-foot iron planer with power cross and down feed. The company is very desirous of securing this tool at an early date. About \$12,000 worth of machinery has recently been bought, and the company has under way the purchase of a special machine from the Detrick & Harvey Machine Company, Baltimore, Md. It will be remembered that the plant in which the company manufactured its Metcalfe gas and gasoline engines was destroyed by fire in the spring, and that it then secured the plant in Greencastle, which it immediately began to equip for turning out the engines. The machinery thus far purchased is only a starter, and such special tools as will be required for producing the work and expediting the manufacture of the engines will be added right along.

Special tools and appliances that can be used to advantage in the manufacture of its printing presses and auto-plate machines are required by the Campbell Printing Press & Mfg. Company, Taunton, Mass.

General machine shop equipment, including turret lathes, milling machines, bolt cutters, power punch and shears, and compressed air machines for bolting frames are desired by the Logan Auto & Mfg. Company, Chillicothe, Ohio, which lately increased its capital stock to \$100,000. The company has purchased the plant of the Woodcock Foundry Company, and will remodel and re-equip it for the manufacture of automobiles. B. A. Gramm, vice-president and general manager, has the matter in charge.

The Mexican Car & Foundry Company, Mexico City, Mexico, has closed for about \$35,000 worth of machinery for its new plant, the specifications for which were issued in these columns last week. The company expects to buy considerable more machinery after the first year's operation.

The New York Central & Hudson River Railroad is making further purchases of equipment for its power houses in connection with its terminal electrification scheme. For both the power plants at 149th street and Yonkers, Charles T. Henry, 141 Broadway, New York, general sales agent for the Epping-Carpenter Company, has secured orders for the pumps. He has also closed contracts for pumps for the West Albany shops of the New York Central. This is the second order for equipment for large power stations in New York lately secured by Mr. Henry, he having recently closed with Westinghouse, Church, Kerr & Co. for the pumps for the power station of the Pennsylvania tunnel at Long Island City.

Following are the bids opened at the Bureau of Yards and Docks, July 9, for furnishing and installing two condenser sets at the Navy Yard, Boston, Mass.:

Wheeler Condensing Engineering Company, New York, item 2, \$10,780.

Alberger Condenser Company, New York, item 2, \$9985. Henry R. Worthington, New York, item 1, \$8320; 2, \$7852; time, three months.

The General Electric Company has selected Cochrane feed water heaters for the plants at West Lynn, Mass., and Harrison, N. J., where Curtis steam turbines are to be installed. These heaters are rated at 3000 and 1000 horse-power respectively, and will take the exhaust steam from the auxiliaries. Three 5000 horse-power Cochrane heaters have also been installed in connection with steam turbines at the Delway (Mich.) Station of the Detroit Edison Company, and a 600 horse-power Cochrane feed water heater will be used in the new turbine station of the Iowa & Illinois Interurban Railway Company, Clinton, Iowa. A 2000 horse-power Cochrane heater, which has been ordered by the Electric Company of America, will be installed with steam turbines in its new plant at Marion, Ind.

Many of the large orders recently taken in the West by Manning, Maxwell & Moore, New York, were secured through their Chicago branch, of which A. J. Babcock is manager and has been for some years. Among these may be mentioned the entire lot of tools for the Illinois Central Railroad, amounting in value to more than \$150,000.

The Backus Water Motor Company, Newark, N. J., has just been awarded a contract for four gasoline engines for pumping sewage at Ardmore, Pa., in connection with the great Philadelphia sewage disposal plant.

The J. R. Vanduyck Company, 8 Day street, New York, has reincorporated under the laws of the State of New York as the Vanduyck-Churchill Company, with a capital stock of \$50,000. The old company was incorporated under New Jersey laws and the new corporation was formed simply as a matter of convenience, there being no change except in the name. The officers are James R. Vanduyck, president; Ralph J. Leavitt, vice-president; Albert G. Lea, manager of the Philadelphia office, vice-president, and Lester B. Churchill, secretary and treasurer.

Wm. H. Armstrong, formerly manager of the New York business for the Chicago Pneumatic Tool Company, is now associated with the Ingersoll-Sergeant Drill Company of 26 Cortlandt street, New York, and will look after the interests of the Pneumatic Tool Department.

The Standard Engineering Company, Ellwood City, Pa., makers of bolt threading and cutting machines, has appointed A. A. Schaefer, New York, sales manager, with offices at 150 Nassau street, New York City.

It is stated that the power plant which the Niagara, Lockport & Ontario Canal Company is to construct at Lockport, N. Y., will be the largest and most costly of any of the electric power plants in the Niagara region. It involves the building of a deep canal from La Salle, on the Niagara River, to Lockport, where a fall of 300 feet is obtained. The plan for financing includes a bond issue of \$24,000,000 on the corporate property of the company. It is also stated that Vanderbilt interests are thought to be backing this enterprise for the purpose of acquiring a power plant of their own for electrifying their lines on the Niagara frontier and eventually portions of the New York Central and West Shore roads.

New York.

NEW YORK, August 3, 1904.

Pig Iron.—The demand from the foundries is rather limited, and while no Southern Iron is pressed for sale there are persistent reports of low offerings by some Valley furnaces, somewhat under the basis of \$13.50, at Valley furnace. A Steel works has purchased an aggregate of about 12,000 tons of Basic Pig, of which a part was Southern Iron. We quote for Northern brands \$14.75 to \$15, for No. 1 Foundry \$14 to \$14.50, for No. 2 Foundry and \$13 to \$13.25 for Gray Forge. Tennessee and Alabama brands are \$13.25 to \$13.50 for No. 2 Foundry and \$12.75 to \$13.25 for No. 3 Foundry.

Steel Rails.—The market is very quiet, and no new sales of any importance are reported. We quote \$28 for Standard Sections, and \$21.50 to \$23.50 for Light Sections, according to weight, at tidewater.

Cast Iron Pipe.—Small orders only are reported by manufacturers. These continue to come in good numbers, keeping the volume of business up to a reasonable point, but at the same time leaving room for more work in the foundries which causes all open contracts to be sharply competed for. Carload lots are quoted at \$25.50 per gross ton for 6 to 10 inch and \$25 for 12-inch, at tidewater, but these prices are cut quite considerably on good tonnages.

Finished Iron and Steel.—July proved a fairly good month with the American Bridge Company, the contracts booked having aggregated over 30,000 tons. Structural business is therefore far from dead, notwithstanding the lack of interest shown by the railroad companies. So far as the immediate future is concerned, the railroads present no promise of work. The little hope that had been awakened by some recent inquiries has faded. Therefore bridge work is very slack. Buildings, however, are coming up in good number and a great deal of estimating is being done. Other branches of the Finished Iron and Steel trades are still quiet. Prices are being maintained, even though the volume of business is light. We quote, at tidewater, as follows: Beams, Channels, Angles and Zees, 1.74½c. to 2c.; Tees, 1.79½c. to 2c.; Bulb Angles and Deck Beams, 1.84½c. to 2.05c. Sheared Plates in carload lots are 1.74½c. to 1.85c. for Tank, 1.84½c. to 2c. for Flange, 1.94½c. to 2.10c. for Marine and 1.94½c. to 2.50c. for Fire Box, according to specifications. Refined Bar Iron, 1.44½c. to 1.49½c.; Soft Steel Bars, 1.49½c.

Old Material.—A little business is being done in all classes of Old Material, with the possible exception of Car Wheels, which seem to be absolutely neglected. In a general way, the feeling is more hopeful, inquiries being a little more plentiful and a slightly stronger disposition to buy being shown. It is hoped that dealers will be conservative and not force prices higher by purchasing too liberally. The movement to be healthy should come from consumers. Quotations per gross ton, New York and vicinity, are approximately as follows:

Old Iron Rails.....	\$14.50 to \$15.00
Old Steel Rails, long lengths.....	12.50 to 13.00
Old Steel Rails, short pieces.....	10.50 to 11.00
Relaying Rails.....	16.00 to 17.00
Old Car Wheels.....	10.00 to 11.00
Old Iron Car Axles.....	15.50 to 16.00
Old Steel Car Axles.....	14.00 to 14.50
Heavy Melting Steel Scrap.....	10.50 to 11.00
No. 1 Railroad Wrought Scrap.....	12.50 to 13.00
Iron Track Scrap.....	11.00 to 11.50
Wrought Pipe.....	7.50 to 8.00
Ordinary Light Iron.....	4.50 to 5.00
Cast Borings.....	4.00 to 4.50
Wrought Turnings.....	6.00 to 6.50
No. 1 Machinery Cast.....	10.50 to 11.00
Stove Plate.....	8.00 to 8.50

Metal Market.

NEW YORK, August 3, 1904.

Pig Tin.—The market has continued its upward movement, although without the sensational movements experienced in the past week or two. The monthly statistics of the New York Metal Exchange for July 31 indicate that the metal is in good statistical position. The deliveries into consumption last month are estimated at about 2600 tons, while the total visible supply on July 31 is figured at 2689 tons below that of July 31 of last year. Nevertheless, the consumptive demand is light, and the market, as a whole, very quiet. At the close, spot Tin was quoted at 27c. to 27.20c., and September delivery at 26.75c. to 27.10c. The London market shows an advance, present prices being £123 for spot to £123 7s. 6d. for futures. Following are the statistics published for the month of July by the New York Metal Exchange:

The total visible supply on July 31 is 2689 tons below that of July 31 of last year.	
Arrivals at the Atlantic ports amounted to.....	Tons. 2,113
Total arrivals since January 1, 1904.....	21,509
Of which from Straits by direct steamers.....	7,980
United Kingdom.....	12,221
Holland.....	357

European Continent.....	951
The deliveries for July we figure as.....	2,600
Total deliveries since January, 1904.....	21,700
Deliveries same period in 1903.....	25,000
The shipments from Straits amounted to.....	4,425
Against previous month.....	5,105
July, 1903.....	4,595
Australia shipped.....	395
Against previous month.....	422
July, 1903.....	356
Statistics for the United States—Pacific ports excluded—July 31, show as follows:	
Stocks, including on dock and arrivals.....	1,180
Afloat.....	3,209

Total..... 4,389
Below we give the total statistics for Europe and the United States, showing:

Tons.	
Total visible supply July 31, 1904.....	13,818
Against visible supply June 30, 1904.....	13,780
Against visible supply July 31, 1903.....	16,507

Deliveries into consumption were light, amounting to 2600 tons. The total for the seven months of this year shows a decrease of 3800 tons compared with the same period last year.

The combined deliveries of London and Holland for July were 927 tons larger than last year. For the seven months of this year they show an increase of 1624 tons compared with the same period of last year.

Shipments from the Straits for July were 170 tons smaller than for the same month of last year. For the seven months of this year they are 1692 tons more than for the same period of last year.

Australia shipped 39 tons more in July compared with the same month of last year. The total decrease for the seven months of this year amounts to 5 tons, compared with the same period of last year.

Copper.—The market rules somewhat lower and is easier in spite of the very heavy export shipments. It seems that the producers are anxious to sell, but consumers are still reluctant to purchase, in the expectation that prices may go lower. It was reported to-day that the principal lake producer had reduced its prices in Europe. The European statistics show quite a substantial increase in the visible supply of Copper on the other side. The market at the close was dull and rather weak, with Lake Ingot quoted at 12.50c. to 12.75c., Electrolytic at 12.50c. to 12.75c. and Casting Copper at 12.25c. to 12.50c. The London market shows a decline, prices to-day being cabled at £56 15s. for spot and £56 17s. 6d. for futures. Best Selected has advanced 5 shillings to £61. Exports during the month of July were large, amounting to 18,709 tons. Total exports since January 1, exclusive of Southern ports for July, were 132,814 tons, making an increase of 60,572 tons for the first seven months of the year, compared with the same period of last year.

Pig Lead.—The Lead market is quiet and uninteresting, buying being light and for the most part confined to relatively small amounts to fill immediate requirements. The American Smelting & Refining Company quotes Desilverized in lots of 50 tons or more, shipment within 30 days, at 4.10c. Spot Lead from store rules at 4.20c. to 4.25c. St. Louis quotes 4c. to 4.02½c. and London is unchanged at £11 13s. 9d. The total shipments of Lead Ore from the Joplin district from January 1 to July 1 amounted to 19,182 tons, compared with 17,455 tons for the same period last year.

Spelter.—Dullness continues to characterize the market for Spelter, but prices remain steady. Spot is quoted at 4.85c. to 4.95c., and August deliveries at 4.80c. to 4.90c. St. Louis is unchanged at 4.75c., and London has declined 5 shillings to £22 2s. 6d.

Antimony.—Demand is light and the market easy. Cookson's is quoted at 7c. to 7.25c., and Hallett's at the same figures, while other grades rule at 6c. to 6¼c.

Nickel.—The usual amount of business is passing, and prices are firm, large lots being quoted at 40c. to 45c., and smaller quantities at 50c. to 60c.

Quicksilver.—The market is quiet and rather weak, with ample stocks and a demand of moderate proportions. Flasks of 76½ lbs. are quoted at \$42.50. The London price is unchanged at £7 17s. 6d.

Tin Plate.—No special change has been developed in the market. A fair run of current business is noted, but the large buyers are virtually out of the market, the requirements of the canning trade having been largely filled. The pack of vegetables and fruits and other canning produce is likely to be so large this year, not only on account of their abundance, but also by reason of the depleted condition of stocks of canned goods held over from last year, that it is not unlikely that the canning demand will continue in a spasmodic way for some little time to come. The mills are generally running full. Prices are rather unsettled since the reduction made last week. The American Sheet & Tin Plate Company is quoting 14 x 20 100-lb. Coke Plates at \$3.30, Pittsburgh, making the price delivered in New York \$3.49 per box.

No. 2 Wharton Furnace, one of the large furnaces of the group at Port Oram, N. J., owned by Joseph Wharton, is blowing in.

National Metal Trades Association Notes.

CINCINNATI, August 1, 1904.—St. Louis reports that during the week just past there has been a decided increase in the calls for help. The vacancies include those of all round machinists, lathe, boring mill, planer, punch and vise hands, handy men, solderers and blacksmith helpers. These places were promptly filled. On July 26 a strike was declared by the polishers and buffers employed in the shop of Degge & Musick. Eight of the 11 vacancies have already been filled with men exceptionally good in this line of work.

Reports for the week ending July 29 show the employment of 16 skilled laborers, while 21 men were discharged. There were 17 applications for work and 4 calls for help. Conditions are unchanged and all is quiet.

At New York, with the exception of the Burlee Dry Dock Company and the W. A. Fletcher Company, the shops of the association are all running under normal conditions. Union and nonunion boiler makers are working harmoniously together, and the long established custom requiring four boiler makers in a gang outside of the shop has been abolished, and the boiler makers are being distributed into gangs as desired.

The following shop rules have been issued by the New York Metal Trades Association:

Open shop policy and principle shall prevail in all departments of this plant. Every workman who elects to work in this plant will be required to work peaceably and harmoniously with all his fellow employees.

When a workman is discharged or laid off he shall be paid without unreasonable delay.

When a workman leaves of his own accord he will receive the pay due him at the next regular pay day.

The proprietor shall determine, without interference from any workman, the manner in which journeymen, helpers and apprentices shall be distributed in gangs.

Necessary car fares and ferriages shall be paid a workman when he is sent from plant to job.

There shall be no restriction or discrimination on the part of a workman as to the handling of any materials entering into the construction of the work upon which he is employed.

There shall be no limitation placed upon the amount of work to be performed by a workman during working hours.

There shall be no restriction as to the use of machinery or tools, or as to the number of men employed in the operation of same.

No persons other than those authorized by the employer shall converse or otherwise interfere with workmen during working hours.

At the convention of the American Federation of Labor held in Boston last spring the subject of jurisdiction of work between boiler makers and structural iron workers was referred to its Executive Committee for report, both organizations agreeing to abide by the decision rendered. The committee has made the following decision:

1. Smoke stacks are awarded to the Brotherhood of Boiler Makers and Iron Ship Builders of America.

2. Gasometers, steam, air, gas or water tight tank work, with the frame work to the coping of the outer tank, is awarded to the boiler makers and the guide frame work above the coping of the outer tank is awarded to the International Association of Bridge and Structural Iron Workers.

3. Erection of rib, girder and angle iron work in connection with coal hoppers and ash chutes in buildings is awarded to the structural workers.

4. Assembling and erection of the frame and plates on safety deposit vaults is awarded the structural men.

Some progress has been made in the Worcester molders' strike, and the foundries are running with a force equal to the necessities for taking care of their work. Orders are being filled promptly and there is little trouble with the pickets.

The Stillwell-Bierce & Smith-Vaile Company.—Stockholders and bondholders of the Stillwell-Bierce & Smith-Vaile Company, Dayton, Ohio, recently forced into bankruptcy, are taking steps to protect their interests. It develops the mortgage given does not cover the patent rights owned by the company, which gives it a monopoly on a certain valuable patent. Under order of the court the property is to be offered for sale in 30 days—in two ways—first, the property actually covered by the mortgage, and, second, the property in its entirety. The bondholders have named L. P. Clawson, James H. Gates and J. M. Hutton as a special committee. This committee has selected the Cincinnati Trust Company as a place

for the deposit of the bonds, which are \$300,000 first mortgage 6 per cent. The stockholders and bondholders will endeavor to secure possession of the property and reorganize the company. In any event the valuable patent rights, which are not included in the mortgage, will be contested for before the property gets out of the reach of the present stock and bondholders. The trustees under the order of the court are W. S. Rowe and Nat Henchman Davis, Cincinnati, and Harry Talbot, Dayton, Ohio.

July Fluctuations in Iron Stocks.

The following table shows the fluctuations in quotations of the stocks of iron and steel companies in the month of July, with the dates on which the highest and lowest prices on each stock were realized:

Capital.	Lowest.	Date.	Highest.	Date.
..... Allis-Chalmers, com.....	9	19	12	29
..... Allis-Chalmers, pref.....	44	18	55	26
\$41,233,300 American Can, com.....	4	6	4 7/8	18
41,233,300 American Can, pref.....	38 3/4	5	44	20
29,000,000 Amer. Car & Fndry, com.....	14 3/4	1	19 1/2	25
29,000,000 Amer. Car & Fndry, pref.....	71	1	79	15
24,100,000 Amer. Locomotive, com.....	19 1/4	1	23 1/4	18
25,000,000 Amer. Locomotive, pref.....	82	1	88	29
..... Am. Steel Fndries, com.....	3 1/2	1	7	18
..... Am. Steel Fndries, pref.....	27	1	30 1/4	15
45,000,000 Cambria Steel.....	19 1/2	1	20 1/4	19
7,000,000 Central Foundry, com.....	1 1/4	22	1 1/2	22
17,000,000 Colorado Fuel & Iron.....	30 1/4	1	38 1/2	25
25,000,000 Crucible Steel, com.....	4 1/4	1	5 1/2	25
25,000,000 Crucible Steel, pref.....	35 1/2	1	37 1/2	12
..... Dominion Iron & Steel.....	7 1/2	8	9 1/4	29
4,449,800 Otis Elevator, com.....	30 1/2	16	30 1/2	16
6,350,000 Otis Elevator, pref.....	88	18	88 1/2	21
16,500,000 Pa., new, pref., Phila.....	76	22	76	22
12,500,000 Pressed Steel, com.....	26	5	34	13
12,500,000 Pressed Steel, pref.....	70	1	77 1/4	25
10,000,000 Railway Spring, com.....	17	1	20 1/4	13
10,000,000 Railway Spring, pref.....	75	27	79	13
27,191,000 Rep. Iron & Steel, com.....	6 1/2	6	8 1/2	25
20,306,900 Rep. Iron & Steel, pref.....	41	1	46	25
7,500,000 Sloss-Shef. S. & I., com.....	35	5	39 1/4	25
6,700,000 Sloss-Shef. S. & I., pref.....	84 1/2	15	85	28
20,000,000 Tennessee Coal & Iron.....	35	5	44 1/2	26
12,106,000 U. S. C. Pipe, com.....	7 1/2	22	8 1/2	21
12,106,000 U. S. C. Pipe, pref.....	47	5	50	6
510,361,300 U. S. Steel Co., com.....	9 1/4	1	12 1/2	18
508,511,200 U. S. Steel Co., pref.....	55 1/4	1	63 1/2	25
..... U. S. Steel Co., new 5's.....	76	1	79 1/4	18
10,000,000 Va. I. & C., 5 p. c. bonds.....	68 1/2	11	71 1/4	14
1,500,000 Warwick I. & S.....	3 1/2	8	3 1/2	8

The Dominion Rail Mill Contract.

The Wellman-Seaver-Morgan Company, Cleveland, Ohio, has just been awarded the contract for building complete the new rail mill to be installed by the Dominion Iron & Steel Company, Limited, Sydney, N. S. This contract was awarded to the first named company in the face of very severe competition from some of the leading American, English and German rolling mill manufacturers, and is a striking testimony to its ability, not only to design, but to construct, as the entire plant is to be delivered ready for operation within 90 days. Within 24 hours after the awarding of the contract in Sydney, the Cleveland works of the Wellman-Seaver-Morgan Company had started work on it.

The general arrangement of the mill will be on similar lines to the one designed by the Wellman-Seaver-Morgan Company for the Ensley plant of the Tennessee Coal, Iron & Railroad Company, which is now in successful operation, and will embrace the very latest improvements, not only in rolling the rails, but the handling of them on the tables and manipulators.

The Wellman-Seaver-Morgan Company is also carrying on very extensive work in Nova Scotia for the Nova Scotia Steel & Coal Company, being engineer for the new steel works, and in addition, constructing an extensive ore handling plant, which is equipped with the former's latest design of ore handling cranes, &c.

The Steel Company of America has been incorporated, with a capital stock of \$3,000,000, for the manufacture of steel castings, and will either take up an existing plant or build a new one. Representatives of the company have

been negotiating for property in Harrison, N. J., and have also been investigating the plant of the Astoria Steel Company, Astoria, N. Y., with the view of purchasing it. It is known that the receiver of the Astoria Company has been trying to dispose of the property and that it can be bought at a very reasonable figure. The new company is backed by responsible men, but their names will not be divulged until the officers and directors are elected. The attorney for the company is Charles Howard Williams, 31 Nassau street, New York.

PERSONAL.

W. C. Temple of the Cahall Sales Department, Pittsburgh, has gone to the St. Louis World's Fair, making the trip in an automobile.

M. McMurray has resigned his position as general superintendent of the blast furnaces and steel works of the Cleveland and Pittsburgh districts of the American Steel & Wire Company, to become the manager of the coal and iron interests of M. A. Hanna & Co., Cleveland. His associates in his old company have presented him with testimonials of their esteem.

George K. Willand, secretary of the Washburn shops of the Worcester Polytechnic Institute, Worcester Mass., has sent in his resignation to the Board of Trustees. Mr. Willand, who has been identified with the Institute for the past 10 years, purposes entering the manufacturing business in Worcester.

Robert W. Flenniken, secretary and treasurer of the Cherry Valley Iron Company, Pittsburgh, has returned from an extended automobile tour through Europe.

C. W. Leavitt & Co.—In a personal item published in the last issue of *The Iron Age* the impression was created that the firm of C. W. Leavitt & Co. of New York, importers of ores and metals, was winding up. This was a mistake. The firm of C. W. Leavitt & Co. is being continued under the former firm name by W. F. B. Leavitt, the second son of the late C. W. Leavitt, and C. D. Robb, both of whom have been connected with the former firm for years past.

Bids on Steel Bridges.

The table given below is interesting as illustrating the great variation in values placed on structural steel, forgings and cast iron by the bidders on four steel bridges to be erected over the Illinois-Mississippi Canal by the United States Government. Bids on the structural steel, 139,672 pounds, ranged from 3.95 cents per pound to 5.67 cents; forgings, 13,500 pounds, from 7½ cents to 12.05 cents; castings, 122,400 pounds, from 1.85 cents to 4 cents. The lowest bidder on the contract was the Pittsburgh Construction Company, Pittsburgh, Pa., the total amount being \$11,017.29.

	Steel, per lb.	Forgings, per lb.	Cast Iron, per lb.	Total.
St. Paul Foundry Co., St. Paul, Minn....	\$0.044	\$0.098	\$0.0335	\$12,680.62
Modern Steel Structural Co., Waukegan, Wis.	0.040	0.08	0.04	12,267.01
Massillon Bridge Co., Massillon, O.	0.0414	0.082	0.03	11,616.38
Van Dorn Iron Works Co., Cleveland, O.	0.046	0.16	0.02	11,911.05
Pittsburgh Steel Construction Co., Pitts- burgh, Pa.	0.0397	0.1205	0.0247	11,017.29
King Bridge Co., To- ledo, O.	0.05	0.09½	0.0185	11,525.20
Wallace Marshall, La- fayette, Ind.	0.0474	0.12	0.0225	12,028.13
Morava Construction Co., Chicago, Ill.	0.0395	0.12	0.03	12,207.64
Worden-Allen Co., Mil- waukee, Wis.	0.0567	0.10	0.03½	14,647.16
Horace E. Horton, Chicago, Ill.	0.04½	0.07½	0.03½	11,543.07

The Trenton Iron Company Absorbed.

Announcement is made that the United States Steel Corporation has purchased the plant of the Trenton Iron Company, Trenton, N. J., and has paid for it with second mortgage 5 per cent. bonds. The exact terms were not made public, although it is asserted that the amount paid was \$480,000. The negotiations for the purchase were handled for the Steel Corporation by its officers and for the Trenton Iron Company by Erskine Hewitt and James O. Greene.

The Trenton Iron Company was organized by a special act of the legislature in 1847, and its original incorporators were Peter Cooper, James Hall, Edward Cooper and Abram S. Hewitt. Its last report, of date September 17, 1903, shows directors and officers as follows: Directors: Edward Cooper, Peter C. Hewitt, Edwin F. Bedell, Erskine Hewitt, Lloyd S. Brice. Officers: President, Edward Cooper; vice-president, Erskine Hewitt; treasurer, Chas. E. Hewitt; secretary, Eagleton Hauson. The authorized capital stock of the company is \$2,000,000, but the actual amount issued and outstanding is \$600,000. The plant comprises a rod mill and its auxiliary heating furnaces, several trains of cold rolls and about 500 blocks of drawing wire, the annual rod capacity being placed at 18,000 gross tons. The purchase was made by the Steel Corporation for the American Steel & Wire Company, which will operate the plant. The American Bridge Company, also a subsidiary of the Steel Corporation, has for some time owned the structural steel plant, the bolt and nut works, the rolling mill and steel works, formerly operated by the New Jersey Steel & Iron Company, also a Cooper-Hewitt enterprise.

Iron and Industrial Stocks.

Some interesting movements have occurred during the past week in some of the iron and steel stocks. Tennessee Coal & Iron advanced from 42¼ to 46¼, reaching the latter figure on Tuesday. Republic preferred also made quite a sharp advance, moving up from 42¼ to 45. Colorado Fuel was likewise quite strong, advancing from 34¼ to 37. The United States Steel stocks were firm, but fluctuations were not quite so great. The preferred touched 59½ on Saturday, but advanced to 61¼ on Tuesday, while the common advanced from 11½ to 12½. The new 5 per cent. bonds, which sold down to 77½ on Thursday, advanced to 78½ on Tuesday. Pressed Steel common also advanced from 31¼ to 33¼, following the announcement of the declaration of the usual quarterly dividend of 1 per cent. United States Cast Iron Pipe preferred reached the highest figure on Tuesday at which it has sold for a long time, sales being reported at 52. The advance in this stock followed the announcement of the declaration of 1¼ per cent. dividend for the quarter, which is an advance of ¼ per cent. National Enameling & Stamping had been quiet for a long time, but sales of the common were reported during the week at 14¼ to 15 and of the preferred at 75, both of which show reductions since previous sales. Last transactions on active stocks up to 1.30 p.m. on Wednesday were made at the following prices: Car & Foundry common 18½, preferred 77; Locomotive common 21¼, preferred 88; Colorado 36½; Pressed Steel common 33¼, preferred 77½; Railway Spring common 19, preferred 75; Republic common 7½, preferred 45; Sloss-Sheffield common 38½, preferred 85; Tennessee 45½; United States Steel common 12¼, preferred 61½, new 5's 78½.

It is understood that the Crucible Steel Company of America has a plan under way for the funding of its debts. The plan provides for the issue of bonds, payable at stated intervals, with which to take up the floating debt, amounting to about \$4,000,000. If the plan is put through it will allow the company a longer time to pay off its floating indebtedness and may possibly also permit the payment of dividends on the preferred stock in the near future, which were suspended in October of last year.

Dividends.—United States Cast Iron Pipe & Foundry Company has declared a quarterly dividend of 1¼ per cent. on the preferred stock, payable September 1. This is an increase of ¼ per cent. over the rate that has been maintained for several years.

Pressed Steel Car Company has declared the regular quarterly dividends of 1¼ per cent. on the preferred stock, payable August 23, and 1 per cent. on the common stock, payable August 30.

The Standard Sanitary Mfg. Company, Pittsburgh, has declared the regular quarterly dividend of 1¼ per cent. It is stated the business of the company for the last quarter showed considerable improvement over the same period last year.

The Westinghouse Brake Company, London, England, paid last week a semiannual dividend of 5 per cent. The majority of the stock in this concern is owned by the Westinghouse Air Brake Company of Pittsburgh.

The National Fire Proofing Company, Pittsburgh, has declared the regular quarterly dividend of 1¼ per cent.

It is probable that in the event of failure to effect a settlement of the hoop scale the hoop mills of the Carnegie Steel Company, at Youngstown, Warren and Girard, will be made nonunion. Conferences between committees of the company and the men were held last week and are continuing this week.

OBITUARY.

NOTES.

A. J. TULLOCK, president of the Missouri Valley Bridge & Iron Works, Leavenworth, Kan., died July 21, after two years' illness. Mr. Tullock was a civil engineer of note throughout the West and Northwest. He also did considerable construction work for the Mexican Government.

CHARLES M. JOYCE, formerly a prominent foundryman of Brooklyn, N. Y., died of paralysis in Chicago, July 24. Mr. Joyce was born in Ireland and was 64 years old. Twenty years ago he removed from Brooklyn to Chicago and later to California, where he became interested in a number of mining operations.

WILLIAM H. WELLS, central district manager for the American Can Company, died in Chicago, July 18, from typhoid fever, after a brief illness. Mr. Wells was for many years identified with the tin plate business in New York City, and was extremely well known in the metal trade throughout the country. His first employment was with Phelps, Dodge & Co. of New York, but he subsequently connected himself with the firm of Robert Crooks & Co. in the same city, with whom he remained for 17 years as manager of their tin plate department. On the formation of the American Tin Plate Company Mr. Wells was appointed to the position of representative of that corporation on the Pacific Coast, with headquarters in San Francisco, Cal. A few years ago he accepted the position of district manager for the American Can Company, with headquarters in Chicago, which position he held at the time of his death.

Labor Notes.

Another of the already long list of judicial decisions establishing the rights of the employer has been handed down at Vancouver, B. C., in a suit alleging conspiracy brought by labor unions against the Vancouver Employers' Association. The Vancouver Engineering Works posted rules changing their shops from union to open. The employees went on strike, and the Employers' Association, comprising the prominent employers of labor in the city, refused to employ the strikers, whereupon charges of conspiracy were made on the ground that the strikers were deprived of work. The case was heard before a special jury, which decided that, as the intention of the Employers' Association was to assist the Vancouver Engineering Works to obtain an open shop and not to injure the men, the action was not a conspiracy, but an incidental misfortune necessitated by proper action in the pursuit of the betterment of trade conditions. The case is all the more interesting as showing that the Canadian courts quite agree with those of the United States in their understanding of the equity that should govern the relations between employer and employee.

The labor bureau at Hartford, Conn., which is being established under the auspices of the Hartford County Manufacturers' Association, will be known as the Manufacturers' Bureau of Hartford County. The office will be at 847 Main street, Hartford. The work of putting the bureau on a working basis is well under way, and it is expected to be ready to begin business in a few weeks.

The Chicago machinists' strike is practically a matter of history, as far as the employers are concerned, as, with here and there an exception, the plants involved in the strike have a sufficient equipment of men to take care of present business and are receiving applications for work daily. The National Metal Trades Association has taken an active part in assisting such of its members as were affected by the strike, and W. P. Eagan of Cincinnati, the new commissioner, has spent considerable time in Chicago in his official capacity. Robert Wuest, secretary of the association, who is located in Chicago, has been in active charge of the task of securing new men to take the place of the strikers.

Trade Publications.

High Grade Crucible Steels.—The Westmoreland Steel Company, Pittsburgh, Pa., has issued a handsome 32-page booklet relating to its products, which comprise special grade steels for special purposes, as well as miscellaneous steels for general use. The tool steels are named Arrow grade, Extra Arrow grade, Dragon grade and Dragon Special grade. The Westmoreland die steels are made in various qualities suitable for hot and drop forging, stamping, pressing, drawing, shearing, embossing, engraving, &c. The college group of fine tempering steel is made under the names of Stevens Staunch, Lehigh Lanet double special, and Cornell Keen self hardening. The Trinity True is a rapid cutting steel for extra heavy cutting at the highest possible speed. Directions for working and tempering steel and standard steel lists are included in the contents of the catalogue.

Grinding, Polishing Machinery and Speed Lathes.—Catalogue B, recently received from J. G. Blount & Co., Everett, Mass., gives numerous illustrations of grinding, polishing and buffing machines; speed lathes, both bench and floor types, and countershafts for use on the various machines. The book is replete with illustrations covering various sizes, including Nos. 1, 2, 3, 4, 5, 6 and 7, plain grinding machines, and Nos. 1, 2, 3, 4 and 5, combination grinding, polishing and buffing machines. Other illustrations show an overhanging polishing and buffing machine with strapping attachment, a set over swivel tail stock lathe, Blount's improved patent tail stock, slide rests, cut off rests and turrets. Each engraving is accompanied with brief description or table of dimensions and prices, placing the information the reader requires in the most available way.

Drill Grinders.—The Heald Machine Company, Worcester, Mass., has recently brought out a new catalogue on drill grinding machinery adapted for handling all sizes of twist drills in common use and also three or four lip drills, flat drills, straight fluted drills and chucking reamers. The machines are given the trade name American drill grinders, and contain a number of distinctive features. Among these emphasis is laid on the double taper bearings for the wheel spindle, which facilitate taking up for wear; the safety wheel chuck, which allows the use of free cutting wheels with safety; and an improved drill holder, the latter being adapted to take the shortest and smallest drills as well as those of larger size. The illustrations show six styles with and without thinning attachments and with either belt or motor drive. Line drawings indicate the action of the automatic lip rest and how to get the maximum results in grinding. An appended table gives the capacity, prices, weights, sizes, &c., for each of the different styles equipped in various manner.

Coal Handling Machinery.—The Link-Belt Engineering Company, Nicetown, Philadelphia, has issued booklet No. 38, entitled "Retail Coal Pockets." The catalogue is profusely illustrated with half-tones showing the company's system of handling coal by machinery, plans as well as photographs being given, which enable the reader to clearly understand it. Special attention is given to boat unloading machinery.

The Tin Plate Scales Completed.—The wage committees of the American Sheet & Tin Plate Company and the Tin Plate Workers' Protective Association have effected a settlement of the scale for tin house labor. The general conditions of the scale are practically unchanged from last year, with the exception that certain labor employed on tin and terne stacks and earning \$1.60 per day and over was reduced 3 per cent. Labor employed on some tinning stacks that are equipped with patented devices of the American Sheet & Tin Plate Company, by which the output of these tinning stacks is greatly increased, was reduced 10 per cent. The reduction in labor on terne stacks averaged 3½ per cent. The rebate clause, by which tin plate workers, when working on tin plate for export, deposited 3 per cent. of their wages in a fund to be drawn against by the American Sheet & Tin Plate Company, has been modified so that the amount deposited by the men in the future will be 1½ instead of 3 per cent. This is really not a concession on the part of the Amalgamated Association, as the American Sheet & Tin Plate Company during the past year voluntarily requested that payments into this fund by the men be suspended. While the fund in the hands of the Amalgamated Association is quite large, yet the claims against it amount to nearly as much as the fund itself.

Sweet's Steel Company.—The first heat of basic open hearth steel was turned out by the Sweet's Steel Company at its new plant at Newberry, near Williamsport, Pa., on Wednesday, July 27. The quality of the steel was all that could be desired. The company has three 12-gross ton Siemens basic open hearth furnaces, all of which will shortly be ready for operation. George Mills is superintendent of the open hearth department.

HARDWARE.

THE proposed parcels post is a topic which has by no means been worn threadbare, although it has been discussed quite frequently in these columns. Its close connection with the catalogue house question gives it an importance which must keep it prominently in the minds of all those who are interested in the welfare of the retail merchant. That the effect of the parcels post is becoming well understood outside of trade circles is shown by an editorial in the New Castle *Herald*, sent us by an esteemed Western Pennsylvania correspondent, and from which we quote as follows:

The *Herald* has been in receipt, from time to time, of literature advocating the adoption in America of the parcels post system, which is in operation in Germany and in some other European countries. The reasons why the Post Office Department should go into the express business are put forward in a way convincing enough to the unthinking. There is a powerful appeal to the public in the argument that parcels can be carried by the Government at a fraction of the charges exacted by the express companies, and the plea of greater convenience in purchasing from distant dealers is not without its force; but there are some sound reasons why the United States should not adopt the parcels post.

The plan is being put forward, not by the farmer, over whose inconveniences the parcels post advocates are shedding tears; not by the village or small city dealer, but by large metropolitan mercantile houses that do mail order businesses. These houses want the parcels post in order that they may further encroach upon the business of the local dealer. They desire the European government express system in order that they may send hams from Chicago to the farmer in Texas, sugar from New York to the villager in Maine, light Hardware from the East to the retail buyer on the Pacific Coast. The first effect of the parcels post would be disaster to the local business man.

And the ultimate effect: In view of the trend toward centralization, perhaps it is not difficult of forecast. The great city houses, rendered a hundred fold more powerful by the parcels post, would wield over manufacturers and producers a club they dare not defy; and presently the small business man would discover that he no longer could buy goods at a price permitting him to compete with the octopl.

The author of this article takes an approved view of the parcels post question. He is in sympathy with the retail dealer, whose existence is menaced. Such a system of postal expansion, if perfected, would give catalogue houses a more perfect and potent means of reaching the consumer and would undoubtedly enable them to wield a powerful influence over the manufacturer, thus doubly working disaster to the retailer. While the ways and means of meeting existing catalogue house competition are being considered by the jobbers and retailers, they should at the same time be active in their opposition to any measure calculated to make that competition still more effective and comprehensive.

It is of interest in this connection to note the attitude of the National Government with respect to the provisions of the parcels post treaties now being negotiated with foreign countries, as indicated in the treaty just concluded with Japan. The keynote in the Government's policy is shown in the limitations as to size and weight of parcels, which clearly indicate the belief of our official representatives that the mails are not intended for the carriage of merchandise at wholesale, although they may be used for the exchange of souvenirs and for the conveyance of small articles purchased in a retail way. The weight of packages in the Japanese convention is limited to 4 pounds 6 ounces, and the greatest length in any direction to 3 feet 6 inches. Precautions have, of course, been taken against

evading the payment of customs duties, but the limitations of weight and size are the most striking features for present consideration. A dozen or more conventions are now in process of preparation with other countries, and they are all modeled on the same lines. The officials of our Government, by thus showing that they are not favorable to the admission of general merchandise to the foreign mails, are not giving much comfort to the advocates of an enlarged domestic parcels post system.

Condition of Trade.

The outlook for trade in the coming months seems to lose nothing in force by the lapse of days, so far as a satisfactory and hopeful feeling is involved, notwithstanding the advent of August—the period when the greatest number of business people avail themselves of an opportunity for relaxation. It is true that with many vacation conditions are reflected in the volume of trade, although one concern which is the leader in an important staple line has averaged a larger business, due to no special causes, for the past seven months than for the corresponding period of even 1903, a record breaker. Jobbers generally have been pursuing a careful and conservative course, not only in Metal Goods and allied manufactures, but in various other branches for some months, buying only for wants, evidently anticipating price concessions, which to any considerable extent have not materialized. Some of them, in need of supplies, have been compelled to order at manufacturers' prices, because they could not wait longer. Favorable reports have also been received from salesmen now on the road, and collections are good. Concerning reference to poor trade, it is well to remember that the average business man usually bases his opinion on record-breaking periods, and is too often busy or dull, according to comparison. In exports, trade is fair for Australia and New Zealand, very quiet in South Africa, the result of overstocking a war stricken territory, in which sufficient time for recuperation has not elapsed, while Europe generally is better. The Scandinavian countries, we are advised, appear to especially good advantage. Cuba is in better shape than heretofore, while shippers to the Orient are rushed with figures, one house having orders for execution which run up to a very large amount.

Chicago.

Demand for Builders' Hardware is growing more active already, although the recent increase in architects' business has not yet reached a point where it is reflected in Hardware purchases, as Hardware ordinarily comes last on the bill of goods bought for a building. There is little doubt now that fall trade in this line will be excellent. Hardware for a dozen large office buildings is in abeyance, but some large contracts must be announced within a few days, as a number of the buildings are nearing completion. A feature of to-day's business in Hardware is the large number of second and third orders received for hot weather goods, such as Ice Cream Freezers, Garden Hose and Fixtures, Screen Doors and Windows, Poultry Netting and Wire Cloth. Evidently dealers underestimated the demand for these goods and are now forced to send in rush orders to keep pace with their business. Shipments are already beginning to be made on Stove Boards, Coal Hods, Pipe and Elbows and other fall goods, though orders received thus far are not as large in volume as they might be. Apparently dealers are satisfied to lay in small stocks with a view to re-ordering, should the demand be greater than their supply. A good demand is in evidence already for Skates, Sleds and other strictly cold weather lines. No change is noted in the Nail situation, except that there seems to be a little less disposition to cut prices than there was two weeks ago. However, buyers of large quantities of Wire Nails are still holding off in the hope that the leading

producer may decide to put into effect the price reduction that has been talked about for so many weeks. The large corn crop in the West is already creating a big demand for Corn Huskers and this bids fair to grow to large proportions when the season really begins. Demand for Registers, Furnace Pipe and kindred lines is increasing. A cut in price in Tin Plate just announced will result doubtless in increased buying. This cut makes the carload price on Tin Plate \$3.30, base, Pittsburgh, or \$3.48, Chicago. Local jobbers have not reduced their store price in line with the mill reduction. The local war in prices of Galvanized Sheets from store is a closed incident, as the dealer who was making a discount of 80 and 2½ from store has sold his stock, and it is understood will not replenish with that line. Present prices from store, Chicago, range from 75, 10 and 5, to 75, 10 and 10, with an occasional 80 off given on large orders. Corrugated Roofing is sold to cornice shops on the basis of 1.60c., Pittsburgh, per square of 28 gauge painted, 2½-inch corrugations. Galvanized corrugated with 2½ corrugations is sold at 2.70c., Pittsburgh, for No. 28. Crop conditions are satisfactory in the West and Northwest, and there is every prospect that farmers will receive high prices for their products. For this reason jobbers are looking forward to a fall and winter business that will bring the year's total up to a good figure, despite the slow trade of the spring and summer months. The miscellaneous part of the stock of Heavy Hardware owned by the S. D. Kimbark Company will be sold from the premises of that company at whatever reductions in prices are necessary to move the stock. The sale will commence next Monday.

Cleveland.

THE W. BINGHAM COMPANY.—Trade in Builders' Hardware is improving. Plain and Fancy Hinges, also medium and high priced Lock Sets, are moving freely. Some manufacturers of these goods pack them in such desirable shape that they are very convenient for the retailers to handle. There has been a good trade in this line of goods all summer, and the quantities bought indicate that there is a great deal of building going on throughout the country. Many dealers held off the fore part of July, thinking that possibly there would be a change in price. Now that they find the prices are steady and even, they are not afraid to buy, and they are laying in good fair stocks of all kinds of Builders' Hardware. Many orders are being booked for Skates, Stove Boards, Meat Cutters, Stuffers, Lanterns, Sleds and Coal Hods, or what are called fall goods. There is a large hay crop all over the country, and orders for Snaths, Scythes, Scythe-stones, Rakes and Horse Hay Forks are still coming in, although the season is a little late.

A good, steady business is coming to us on Wire Nails and Fence Wire, both Plain and Barbed. A lot of orders are being booked for Coal Shovels, Grain and Coal Scoops for immediate and fall shipment. There will be many Grain Scoops used, and customers who postpone placing their orders will have some difficulty in getting the goods promptly, as the manufacturers are not overstocked at the present time. The orders we are receiving do not contain a large number of items, but the quantities of each are larger than usual. On the whole, though we are not overcrowded with business, we are having a good healthy, satisfactory trade for this time of the year.

St. Louis.

NORVELL-SHAIPLEIGH HARDWARE COMPANY.—The Southern States have made large crops of corn, wheat, oats and hay. Prospects for a large cotton crop are excellent, but, of course, it will be fully 60 days before the amount of the cotton crop is absolutely certain. Many visiting Southern merchants state that prospects at this time are better than for many years past. General prospects for all Southern crops are also excellent. Conditions have improved very much in the past 30 days. Unless there is a great change, we expect this year to have the unusual condition of bountiful crops in the Northern and Southern States the same season.

Notwithstanding these conditions immediate buying by the retail trade is not heavy. Merchants have not placed as many orders for future shipment as formerly. While

the fact that this is Presidential year has not had as much bearing upon the business situation as in former Presidential contests, still a spirit of conservatism and carefulness seems to pervade the entire trade. It is reported by salesmen that stocks in the hands of retail dealers are not heavy. Therefore, if the present brilliant prospects for crops are realized, it is only reasonable to expect a very heavy fall business. The demand will all be at once and it will be a question of who has the goods and the capacity to handle the orders.

Letters from manufacturers on the catalogue house question would be more interesting if they signed their names. It hardly seems fair to the jobbers, who have expressed their opinions on this subject openly over their own names, to be answered in anonymous communications.

Philadelphia.

SUPPLER HARDWARE COMPANY.—At the opening of the month of August we are subject to the usual conditions which exist during the first three weeks in August, when as a rule the local trade buys lightly. Many of this trade have recently become accustomed to taking a summer vacation the same as employees in large business houses do, consequently we look for nothing heavy during the early part of this month. Some of the manufacturers state that business was unusually light during the month of July, but that is but natural, as in former years, when manufacturers were so far behind in filling their orders and so many orders were booked ahead, the trade anticipated their wants and placed their orders much earlier than had been their custom and much earlier than is the case this year; so that trade formerly had during the months of June and July must be looked for this year in August and September.

The midsummer dullness is increased by the closing of many textile industries, strikes in various locations, lockouts in other locations, as well as the railroads releasing from their payrolls more employees than has been customary at this time of the year; but with the improvement of business conditions this will largely be overcome. We do not anticipate that the election this year will disturb trade very much.

Crops are all good throughout the country, the country is growing and gaining in wealth as well as population, and is upon a sound financial basis, notwithstanding the great losses from speculation many persons have suffered from throughout the past year.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—July dullness has certainly been emphasized this year, and sales will fall far below corresponding month of last year. Since our last the drought has been broken, and we have had fine showers. However, the rain came too late to be of very much benefit, but it will help to save some of the minor crops. Loggers have been in session, endeavoring to formulate some plan whereby output could be curtailed on an equitable basis. The lumber business is in bad shape at present, and the outlook is discouraging as to any improvement. Collections are good as can reasonably be expected at this season, as we are between "hay and grass."

Baltimore.

CARLIN & FULTON.—July has always been a comparatively quiet month for sales. The present year has proved no exception to the general rule. Summer vacations and hot weather in the cities, with the farming community busy with their crops, curtail business activity to the actual daily necessities.

From the agricultural sections we hear that crops, though a little late, are in most excellent condition, and unless some disaster befalls them, we can all count upon a good fall trade. Large crops, even at low prices, put more money into circulation than small crops at high prices. The labor of harvesting a bushel of wheat is just as great whether the price be up or down 10 or 20 cents per bushel, and the freight charges on the crops of cotton, wheat and corn are not governed by the market prices of the commodities carried. Large crops always mean labor well employed in all lines of business activity.

Prices of Hardware seem remarkably steady, with no

radical changes of any kind. The Axe manufacturers seem to have their business well in hand under the controlling influence of their central management, and for some time at least will control the situation.

Buyers as well as sellers have been conservative, and the ability to obtain goods at short notice has removed the necessity for buying large quantities, which was the rule when the transportation facilities were not so great and manufacturing had not reached its present development.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The market for iron and steel seems to be in a stationary condition; there is no extraordinary disturbance visible. Newspaper bull reports are being utilized apparently by those who would boom the stuff, or the stocks, we do not know which, but they all seem to fall rather flat. Nobody has taken the scare yet, consequently heavy orders for the staple articles for future delivery are the exception. Something will have to come about to give trade an unexpected boost before there is any climbing over each other for material. Crop prospects are extremely good, and people in the country in excellent shape, and banks supplied with money, but whether the prosperity of the past few years has permitted people to supply their wants, so that they have realized their desires, so that they now have all the bric-a-brac and new tools that they once longed after, we cannot say. Possibly the piano and parlor organ man should be called in as an expert on this question. These articles are said to be an index of plethoric pocket books in the working classes, but they are not yet denominated as Hardware, even in the very liberal list which the Ohio dealers made up for *The Iron Age*.

Chicago is the center of disturbance now, the strike interest having shifted from the mines of Cripple Creek to the abattoirs of Lake Michigan. Deeds of violence were to be expected, for, has the Toledo judge recently expressed it, "There is no such thing as a peaceable picket" in the long run or on the short stand. It is an easy matter for these men accustomed daily to "breathing out slaughter" on Texas beeves to turn this same breath on the vulnerable objects of their own kind, hence several of the nonunion people have been beaten to death for the crime of working for a living for themselves and their family. The lawless element must be taught in that part of the country, apparently, about once in so often, that Government is no good unless it can guarantee peace within its own borders. Possibly when Mr. Donnelly shall be persuaded of his place in pages of fame, and shall have seen his name in print a sufficient number of times as a strike magnate who calls out his thousands, he will be willing to call the thing off, but for the time being the temptation to pose as if possessed of boundless power is irresistible, and must be permitted to wear itself out as in the cases of Martin Irons, Debs & Co.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—We are having about the usual business at this season of the year. Business is still interrupted to some extent by the vacation season and the World's Fair craze.

Up to this time we have the finest growing crops that we have had in this country for very many years, and if the season continues favorable for another 30 days the crops will be assured, and we will certainly be living in a land of plenty. Every one is talking about the prospects of crops and future business, and you never hear politics mentioned. Oh, what a happy condition! We have not as yet realized any benefit from the fine crop prospect, as buyers are pursuing a conservative course, and not being disposed to anticipate their wants until they know that the fine crop is a certainty. Within the next two weeks we will begin to feel the effect of this anticipation of buyers, provided there is no unfavorable turn in the weather conditions.

We have had no radical change in prices, as they seem to be pretty well maintained all around. Collections have improved.

THE MILWAUKEE RETAIL HARDWARE DEALERS will run an excursion to Hilgen's Spring Park, August 7.

NOTES ON PRICES.

Wire Nails.—While mills have full assortments and large stocks, there appears to be no desire to make sales by offering further inducements in the way of lower prices than the occasional concessions of 5 to 10 cents per keg, to which allusion has been made in previous reports. The demand shows something of an increase, and the market is more steady than for some time. Regular quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots.....	\$1.90
Retailers, carload lots.....	1.95
Retailers, less than carload lots.....	2.05

New York.—The distribution of Wire Nails from store by jobbers exceeded in volume that of the preceding month. The concessions which have been recently made in prices by mills have resulted in lower prices in the local market. Quotations are as follows: Single carloads, \$2.00; small lots from store, \$2.05 to \$2.10.

Chicago, by Telegraph.—Official prices are as follows, f.o.b. Chicago: Jobbers, carload lots, \$2.05; retailers, car lots, \$2.10; retailers, less than car lots, \$2.20, though these prices are shaded from 5 to 10 cents per keg. Coated Nails are firm at quoted prices of \$1.60 to \$1.65 per keg to dealers or large consumers, delivered, Chicago.

Pittsburgh.—The demand for Wire Nails is showing slight betterment, but none of the mills have enough business booked to run their plants full time. Prices are steadier than for several months, and it is hoped tonnage will soon be large enough to give the mills steady work. Stocks of Wire Nails are said to be large, but there is no pressure to sell at less than the regular prices, which are as follows: Wire Nails, \$1.80 in carloads to jobbers; \$1.85 in carloads to retailers and \$1.95 in small lots to retailers, all f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days, plus freight to point of delivery.

Cut Nails.—The demand and prices have not shown improvement during the week under review, and a shading of regular quotations of 5 to 10 cents per keg is quite general. Regular quotations are as follows for Steel and Iron Nails, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Base.
Jobbers, carload lots.....	\$1.75
Jobbers, less than carloads.....	1.80
Retailers, less than carloads.....	1.90

New York.—The demand keeps up to about the usual proportions for the season. Prices have eased off to some extent, especially for small lots from store, owing to recent lower prices at mill. Quotations are as follows: Carloads on dock, \$1.89; less than carloads on dock, \$1.94; small lots from store, \$1.90 to \$1.95.

Chicago, by Telegraph.—Quotations continue nearer association prices, and \$1.80 to \$1.90, Chicago, is about the going price on carload lots, with 5 cents higher on less than car lots.

Pittsburgh.—Stocks of Cut Nails at the mills, which are quite heavy, together with the present light demand, are having a tendency to cause some unevenness in prices. We quote Steel Cut Nails at \$1.65 to \$1.70, base, in carloads, maker's mill. Less than carloads are held at \$1.70 to \$1.75, terms 60 days, less 2 per cent. in 10 days.

Barb Wire.—In some portions of the West a slight increase in demand is reported. A concession of 5 to 10 cents per hundred pounds is quite general. Official quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$2.20	\$2.50
Retailers, carload lots.....	2.25	2.55
Retailers, less than carload lots.....	2.35	2.65

Chicago, by Telegraph.—Official prices are still held as follows: Car lots to jobbers, Painted Wire, \$2.35; Galvanized, \$2.65. To retailers, car lots, Painted, \$2.40; Galvanized, \$2.70. Retailers, less than car lots, Painted, \$2.50; Galvanized, \$2.80. Staples to jobbers, \$2.25 for Plain; \$2.60 for Galvanized. Staples to retailers, 5 cents higher. From 5 to 10 cents lower than official prices is quite general.

Pittsburgh.—The demand continues light and stocks at the mills are quite heavy. In some sections of the West a slightly better demand for Barb Wire is noted, but it is not being felt in this district. We quote as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days.

	Painted.	Galv.
Jobbers, carloads.....	\$2.10	\$2.40
Retailers, carloads.....	2.15	2.45
Less than carloads.....	2.25	2.55

Smooth Fence Wire.—Shading official quotations, 5 to 10 cents per hundred pounds, results from light demand. Official quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.80
Retailers, carloads.....	1.85
Less than carloads.....	1.95

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base.	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized....\$0.30	.35	.40	.45	.55	.65	1.05	1.15		

Chicago, by Telegraph.—Official prices are as follows, f.o.b. Chicago: Smooth Fence Wire, Nos. 6 to 9, \$1.95 per 100 pounds, in carload lots to jobbers; \$2 per 100 pounds to retailers, and \$2.10 in less than car lots. These prices are being shaded 5 to 10 cents.

Pittsburgh.—From certain sections of the country, notably in the West, come reports of a slight improvement in the demand, but the tonnage is likely to be light for some time, as this is the dullest season of the year in the Wire trade. We quote as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days: Plain Wire, \$1.70, base, for Nos. 6 to 9, in carloads to jobbers, and \$1.85 to \$1.90 in small lots to retailers. Galvanized, 30 cents extra for Nos. 6 to 14.

Rope.—Business with manufacturers keeps up fairly well, and an increase in the demand is anticipated in September. Quotations on the basis of 7-16-inch diameter and larger are about as follows: Pure Manila, 11½ cents per pound; other grades of Manila, 10¼ to 11 cents, according to quality; pure Sisal, 9 cents; mixed Sisal, 7½ cents.

New York Belting & Packing Company.—New York Belting & Packing Company, 91 and 93 Chambers street, New York, announce the withdrawal of all prices on rubber goods, taking effect August 10. New prices will be named on application, it being intimated that the advance will only be consistent with the increased cost of manufacture and the maintenance of the high quality of their products. The company remark that the price of all grades of crude rubber has steadily advanced during the past two years and is now higher than for 20 years.

Glass.—Western Glass jobbers held a meeting at Chicago on July 26, at which time they advanced prices to 90 and 15 per cent. discount from jobbers' list of October 1, 1903, in less than carload lots. The meeting adjourned to meet in St. Louis in 30 days. There is a marked scarcity of desirable sizes, both in single and double strength, and those conversant with the Western Glass trade expect an advance by the middle of the month to 90 and 10 per cent. discount, or perhaps higher. It is understood that the Producers' Glass Company had expected to arrange for the purchase of Glass by certain of the jobbers, but at the above meeting the deal was not consummated, and the Glass which the company had optioned, for the larger part, has reverted to the original holders.

Oils.—*Linseed Oil.*—The demand is light and confined to purchases of small lots, buyers for the most part pursuing a hand to mouth policy. Some crushers are willing to accept orders for August-September delivery, while others express themselves willing to take orders for delivery for longer periods. Large buyers are not in the market to any great extent. The market is firm, and smaller crushers appear to follow prices made by the largest interest. Quotations are as follows: City Raw, in

lots of five barrels or more, 45 cents per gallon; in lots of less than five barrels, 46 cents per gallon; State and Western Raw, 43 to 44 cents per gallon. Boiled Oil, the usual 2 cents advance per gallon over Raw.

LUDLOW-SAYLOR WIRE COMPANY TO ENLARGE.

THE LUDLOW-SAYLOR WIRE COMPANY, St. Louis, Mo., has begun work on the enlargement of its plant. In order to secure ground near its present factory it transferred to the Wabash Railroad 575 feet east of Newstead avenue and 15 feet at the southeast corner of the railroad right of way at the same point, in exchange for 340 feet east of Newstead avenue, south of Clayton avenue, and a strip 30 feet long east of Newstead avenue, north of Clayton. The transfer of land thus effected gives to the railroad additional trackage facilities, and to the Wire company property which can be used to good purpose in extending its plant. A new boiler house has been erected and a 200 horse-power boiler been installed, in addition to the present power equipment of the company. Machines for the manufacture of Galvanized Poultry Netting and other Woven Wire products are now being installed and will be working shortly. It is the intention of the company to place on the market a high grade of Poultry Netting and similar products.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses:

FROM E. C. EVANS, who has succeeded Macomber & Evans, in the general Hardware business in West Branch, Iowa.

FROM A. L. KADLIC, Howell, Neb., who has succeeded Snitka & Kadlic in the Hardware, Stove, Implement and Furniture business.

FROM THE POLAND HARDWARE COMPANY, Poland, Ohio, which has been incorporated with a capital of \$10,000, to carry on the wholesale and retail business in Shelf Hardware, Stoves and Tinware, Agricultural Implements, Paints, &c.

FROM GEORGE A. BUSHNELL, 19-21 Wabash avenue, Chicago, who requests catalogues of Shelf Hardware and all regular lines.

FROM J. F. CARSTENS & SONS, Ackley, Iowa, who are successors to J. F. Carsten in the Hardware, Tinware and Stove business.

FROM KLEPINGER HARDWARE COMPANY, Brookville, Ohio, which has purchased the Cloppert Hardware, Stove and Paint business.

FROM E. L. FALL, 303 West 117th street, New York, who will shortly remove to corner of Manhattan and 125th street, where he will enter upon the Shelf Hardware and Electrical and Bicycle Supply business, in connection with a fully equipped shop for tin roofing and general metal repairing.

THE annual meeting of the stockholders of the Peck, Stow & Wilcox Company, Southington, Conn., was held at that place July 28. Much gratification was expressed at the favorable showing, the usual quarterly dividend of 2 per cent. being declared, payable July 30, together with an extra dividend of 2 per cent., payable August 15, thus making 10 per cent. for the year on a capital stock of \$1,250,000. At the election of directors the old board was again chosen, with the addition of Frank C. Sumner, treasurer of the Hartford Trust Company, Hartford, Conn., to fill a vacancy. The Board of Directors re-elected the same executive officers unanimously.

THE CATALOGUE HOUSE QUESTION.

THE JOBBER-RETAILER.

IN connection with the discussion of the question of catalogue house competition, several prominent merchants have suggested that this would be a good time in which to ventilate other irregularities in the trade closely related thereto. Among these is the demoralization caused by the operations of certain houses doing both a jobbing and retail business. This matter is the special topic of the following interesting communication from a well-known retail merchant in the South:

I have followed with absorbing interest the many discussions of the Catalogue House Question as published in *The Iron Age*. I have also been much interested in the question as to whether a retail Hardware merchant should buy through the jobber or from the manufacturer direct. I fully agree with the representative jobbers that a retailer can have his wants supplied more satisfactorily by the jobber than by the manufacturer, and that the jobber is the natural distributor to the retailer, but conditions existing in all the larger cities have forced

Buying Direct in Self Defense

the retailer, in self defense, to go direct to the manufacturer for a part of his goods, and the reason he is compelled to do this is a question

which I want to bring before you.

A retail merchant has no complaint to bring against the jobber who has a retail store and conducts it as such, asking legitimate retail prices and selling no goods at wholesale prices except to merchants. There are, however, so-called jobbers who are doing as much to demoralize prices as any catalogue house, as their competition is right at the door of the retailer and cannot be met by pointing out the freight expense, as can quotations of catalogue houses. The jobber I refer to is found in all large cities and towns, and he it is who sells at retail as well as wholesale, and who has no regular retail store or retail department and no schedule of retail prices. When a customer goes into his place he is waited on by a clerk who does not discriminate as to whether he is a consumer or merchant, and makes prices to the consumer the same as he would sell a merchant.

No Line Drawn

Such houses are doing as much harm to the regular jobbers as to the retailers, as such unnatural competition forces the retailer to go to the manufacturer for relief, claiming—and justly so—that as So and So sells goods to consumers, he (the retailer) is entitled to the same prices as the manufacturer gives the “retailer-jobber.” Such houses are doing the same thing that catalogue houses do—they cut prices below a retail basis; and as the question is up, it behooves the legitimate jobber to look at it from a retailer’s standpoint and endeavor to get manufacturers to classify the jobbers, quoting and selling the “retailer-jobber” at an advance sufficient to enable the legitimate jobber to sell the retail Hardware trade at same price; in other words, such a jobber as

Should be Classed as Retailers

above described should be classed as a retailer, and not entitled to jobbers’ prices. Until the jobbers themselves regulate such unbusinesslike competition they cannot expect manufacturers to pass an order from a retailer when they know his jobber competitor is retailing goods at wholesale prices.

Many instances can be given where, in this city, prices are made to farmers, mechanics and other consumers the same as to merchants. Barb Wire is being sold here at retail at same price as the jobber asks the merchant for it; the same is true of Wire Fencing, Screen Wire, Nails, &c. A mechanic can buy a Plumb’s, Hunt’s or other make of Broad Hatchet here from a “retailer-jobber” at a price within 10-23 per cent. of what that same jobber would ask the retail Hardware merchant. The above facts, which can be easily substantiated, are only a few of many such abuses as exist here and else-

where, and explain in a measure why the retail merchant does not buy more goods from jobbers. All sensible and right thinking retailers would prefer buying from jobbers for many reasons, if they were sure the jobber was able to protect them from his own kind.

If the jobbers expect the manufacturers to market all of their products through them, they must first stop or regulate the abuses now existing, and if they succeed in this they will find the retailer will stand by his best friend, the legitimate jobber.

I am glad to see the jobbers and retailers standing together fighting for a common cause, and while the battle is on it is easier to correct and clean out other related irregularities than it would be were they separated. Hence I hope this question will be discussed in connection with the Catalogue House Question.

WHAT A LUMBER MERCHANT SAYS ABOUT CATALOGUE HOUSE BUSINESS.

I am a subscriber to your paper and have read with much interest your articles in regard to the catalogue house question. As I am a customer of two of the largest of these concerns, and have dealt with them for some years past, I thought it might interest you to know the

Reasons Why I Have Done So.

I am in the retail lumber business and am interested in the progress of this town, and any enterprise in town has my patronage and support unless there are reasons why I consider it to my advantage to trade elsewhere.

FIRST—SELECTION FROM LARGER ASSORTMENT.

The Hardware stores in this town carry only a very limited line and only a few of the different sizes of each article. This might be remedied by the stores being on the alert to send for any article or size not kept in stock, but the practice in this town is that if the customer won’t take what he can get he may go without (or send to Chicago after it, as I do).

I have several times asked the stores to order things which I needed and they did not keep and they have done so, but instead of receiving my goods quickly and at a reasonable price I have had to wait a longer time for the goods and pay a much higher price for them than if I had ordered direct from Chicago. A short time ago my wife wished to buy a Chafing Dish and Table Teakettle. These were not kept in any store in town, and I asked the proprietor to send and get them and gave him pictures and description of the ones offered in the Chicago catalogue with the price cut off. He sent first to a jobber in Troy, N. Y., who did not keep this line of goods, and then, after a week’s delay, he sent to another firm and got just what we wanted, and it cost us \$4.75 more than if I had ordered from Chicago.

SECOND—SATISFACTION IS GUARANTEED.

I have received goods from Chicago which were not satisfactory and have sent them back, and the catalogue houses have been very prompt in making the matter right to the extent of their ability. I have had occasion to return goods to our stores and was received as though I was a “kicker,” and although they usually did make the matter right to a greater or less extent, they did not do it so willingly and as though I had the right to ask to have it done, but as though they were doing me a favor. I think one reason why these catalogue houses have been so successful is that they are determined to have every customer a satisfied customer.

THIRD—OPPORTUNITY TO BUY GOODS NOT KEPT IN TOWN AND TO HAVE DIFFERENT KINDS OF GOODS SHIPPED TOGETHER, as clothing, books, drugs, telephones and Hardware, all in one order, as I did recently, and there was hardly an article in the entire order that could have been duplicated from the stock of any store in town at any price.

FOURTH—PRICE.

A short time ago I had use for 80 Stove Bolts 3-16 x 2 inches. I went to our regular Hardware store

and found that they did not have any of that size. I then went to the store in the next town, which is 5 miles away, and is a much larger store, and they asked me 1 cent each for this size. ————— charge 27 cents per 100, or about one-quarter the price asked by this store. I asked the proprietor if he could make any reduction if I bought a full package of 100 and he said No, very shortly, as though I had asked for something very unreasonable. I came home and ordered 100 Stove Bolts from Chicago at 27 cents, paid 25 cents express charges on them, and still was ahead.

Had this dealer sold me these Bolts at 50 cents per 100 he would have made a profit of about 100 per cent. on his money and I would have been satisfied and glad to have bought them. I did not like to pay 300 per cent. profit and have my head bit off for asking for a lower price.

The dealers in this vicinity sell Common Carriage Bolts at about the price of the manufacturers' list, although *The Iron Age* quotes a discount of 75 per cent. and over. I think that this is too large a profit and that they should be willing to sell quantities at a lower rate than they do one Bolt.

To Cap the Climax,

in my case the Hardware dealer in this town built a new barn last summer, which cost over \$1000, and bought every cent's worth of the lumber of a firm away from home. I have been in the lumber business in this town for 12 years past and should have been glad of at least a chance to make an estimate on this barn. I keep in stock lumber suitable for such buildings and can get any item which I lack at short notice. I have in my office price-lists from over 400 different wholesale lumber firms, and as I take all of the lumber trade papers that I know of, I am in position to find out about anything needed in the lumber line.

After this barn was finished I stopped the Hardware dealer on the street one evening and asked him from whom he bought his lumber, and he looked as though he had been caught stealing sheep and said that his carpenter told him that I did not keep some of the long timber which he needed, and so he bought it from a mill out of town. I told him that I had over 90 per cent. of the material which he had used on hand and could have got the balance very quickly, and that I was quite confident that I could have sold him the entire lot as cheaply as he had bought it, and that I would have been very glad of the chance, and that any time he wanted some little item right off quick to telephone over and we would hitch up a horse and deliver it at regular prices.

When I want anything in the Hardware line that it is to my advantage to send to Chicago for I shall feel in the future that I have got a perfect right and privilege to do so. In the past I have bought only such goods as I could not get at home, but in the future I shall buy anything I can save a cent on from the catalogue houses.

TEN-CENT STORE COMPETITION.

From a Well-Known Retail House in Kentucky: You can hardly imagine the sweet smiles on the faces and the sparkle in the eye of the Hardware retailer as he reads of the movements against the catalogue houses that your paper (we believe) has been the instrument of bringing about. The catalogue house people have certainly worked a very great burden on the retailer, and he is exceedingly glad to feel that he has hopes of overcoming one of the trade's greatest evils.

It seems to us that the game being so large it has closed the eyes of the larger jobbing houses and factories toward, or, we might say, has overshadowed, the 10-cent stores.

A Great Detriment.

These 10-cent people are a very great detriment to the Hardwareman, as they fill their windows with articles such as large Dish Pans, large Buckets, large China Bowls, Saws, Hatchets, Hammers, Axes, Ice Picks, with Enamel Ware as their battle axe, at 5, 10 and 25 cents (the profit bringers). The strictly 10-cent store will sell them all at 10 cents, which completely takes the water

from under the wheel of the Hardware store, as these people live in his town, have the same freight and rents to pay, expenses being practically the same. The customer asks, "How can you make these ridiculously low prices?" The 10-center sings out, "Quantities! the large amounts we buy enable us to have greater purchasing power than your Hardwareman. We sell goods cheap." This poisons the mind of the purchasing public against the Hardware retailer, who is making an honest effort to sell his goods on a living basis, giving the public full value for their cash, and they soon hold him up as a highwayman and a robber, an object lesson of warning to their children. At the same time the Hardwareman's profits will hardly buy bread for the children and pay the preacher on the class of goods he is compelled to sell, as the trade demands strictly good goods from him while they expect to buy nothings from the 10-center.

Some of Our Wholesalers and Factories

will go to these people and oftentimes sell them at less prices than they have sold the Hardwareman to enable the 10-center to put out his big 5 or 10 cent sale, while the poor Hardwareman sucks his thumb and looks silly. War should be waged against this fully as great trade evil.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogue, price-lists, &c., one copy for our Catalogue Department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their line, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

J. E. PORTER COMPANY, Ottawa, Ill.: Catalogue No. 50, devoted to Pumps, including a large line, shown in great variety; also Cylinders and Well Supplies. In addition the company manufacture Haying Tools, Barn Door Hangers, Hay Presses, Corn Planters, &c.

HINDLEY MFG. COMPANY, Valley Falls, R. I.: Columbia Spring Cotters, Flat Spring Keys and Cellar Box Cotters.

C. E. JENNINGS & Co., 42 Murray street, New York: Discount Sheet under date of June 1, 1904.

FRANK WRIGHT, Cave Springs, Ga.: Large post card devoted to Fly Escapes and Fly Escape Screens.

THE SHELBY SPRING HINGE COMPANY, Shelby, Ohio: Price-list, under date of July, 1904, of Shelby Chief Double Acting Spring Floor Hinge, Ball Bearing. The list differs from former ones only in the addition of a few finishes not heretofore catalogued.

BURLINGTON BASKET COMPANY, Burlington, Iowa: Catalogues illustrating a large line of Baskets for all purposes; also catalogue devoted to the Hawkeye Refrigerator Basket, for use at picnics, for travelers, fishing, and in the sick room, office and park.

KELLEY, MAUS & Co., Chicago, are double decking a large portion of their capacious warehouse at the western end of the Lake street bridge, with a view to increasing the available storage space for goods. This increase of store space is made necessary to some extent by the purchase of the S. D. Kimbark Company's business, as announced in our issue of July 21, although there is still much of the Thompson-Hoof stock that has not been transferred to the Kelley-Maus warehouse. The basement floor is being equipped with loading platforms on a level with the car floors, and from these platforms gangways will extend direct to the elevators, so that trucks loaded from cars can be shunted directly from the loading platform on to the elevator or *vice versa*. The office has also been remodeled to accommodate the increased force of officers and assistants, and congestion there has been relieved by transferring branch department offices to their respective floors. Each department head will have his force of active lieutenants working under him in immediate proximity to the goods handled.

SCHENKELBERGER & Co., 244 Purchase street, Boston, Mass., have recently added to their line of supplies an imported Buff Leather for polishing, which, they state, has exceptional strength and pliability.

SELLING FORCE OF SARGENT & CO.

IT is the custom of Sargent & Co., New York and New Haven, Conn. to call in their selling staff at least twice a year to overhaul and rearrange their samples, receive prices and instructions for the ensuing season and discuss with the heads of departments and each other such subjects pertaining to the business of the house as naturally press for consideration at a gathering of this character. In the past these meetings have been held usually in New York, but the last assembly occurred at the New Haven factory. A feature of this meeting not of a business nature was the entertainment of the entire party at the club house of the Pequot Association on Morris Cove in New Haven harbor. The photograph herewith reproduced was taken on the club house steps, the group including the major portion of the traveling salesmen, together with representatives of both the factory and New York store concerned with the selling of goods. Among the absentees are Joseph H. Cherry, now in Australia, and E. P. Dunning. A feature of the photograph is the presence of six of the Sargent family representing three generations, all of whom, including J. B. Sargent, the founder and president of the company, are ac-

Henry B. Sargent, New Haven factory.
Edward R. Sargent, New Haven factory.
A. N. Delvey, salesman in Pennsylvania, Maryland and West Virginia.
John H. Shaw, New Haven factory.
James Denny, salesman in New England and Canada.
Henry F. Keller, salesman in Michigan.
Eugene S. Massey, New York store.
Fred. W. Fellows, New Haven factory.
George F. Wlepert, New York store.
Howard Abeel, salesman in Brooklyn and vicinity.
John H. Jarvis, Philadelphia office.
Charles L. Comfort, salesman in New York City.
R. B. Cherry, salesman in New York State, Pennsylvania and Canada.

WORLD'S FAIR POCKET CUTLERY.

SCHMACHTENBERG BROS., 66 Reade street, New York, are putting on the market a group of souvenir Pocket Knives, commemorative of the Louisiana Purchase Exposition. One series has aluminum scales in various lengths, including 3, 3¼ and 3½ inches, closed. The 3-inch sizes have two blades, the scales showing interesting detail views of the fair in *bas relief*, or raised work. The 3½-inch or largest style, shows views of the Palace of Liberal Arts, Machinery Building, Palace of



Sargent & Co.'s Selling Force.

tively connected with the business at either the factory or the New York branch.

The names of the gentlemen in the picture, a number of whom will be recognized not only by the trade they visit but by Hardwaremen generally, are as follows:

J. B. Sargent, president.
Frank L. Cobb, salesman in the States west of the Mississippi River and along the Missouri River.
M. B. McCausland, New York store.
A. T. Oakley, New York store.
C. J. Smith, Jr., salesman in the Southeast.
Charles Clark Adams, salesman in New England and Canadian provinces.
L. W. Hartsig, Chicago office.
John Sargent, New York store.
Scott C. Ball, salesman in New York State and Pennsylvania.
Ziegler Sargent, New Haven factory.
A. W. Rhinehart, salesman in New York City and vicinity.
Morris Wheeler, salesman in New York State, New Jersey and Pennsylvania.
Thomas J. Atkins, New York store.
Frank P. Van Riper, salesman in Indiana, Illinois, Iowa, Kentucky and Tennessee.
Fred. L. Stellwagen, New York store.
J. Fred. Wright, New York store.
Henry P. Chenoweth, salesman in the Southwest.
Will N. Thomas, Philadelphia office.
Frank Guildener, salesman in the Southeast.
Victor H. Whiting, salesman in the Northwest.
W. A. Rice, New Haven factory.
Charles A. Upham, salesman in Ohio.
Charles L. Titus, salesman in New England.
William H. Spencer, New York store.
G. Lewis Sargent, New Haven factory.
E. F. Brittingham, salesman on the Pacific Coast.
Fred. W. Hughes, salesman in New York State and Canada.
Frank W. Robbins, New York store.
Robert E. Hofer, Boston office.
W. F. Goodrich, salesman in the Southwest.

Electricity and Cascade Gardens, has four blades, and is brass lined. A similar Knife in size and style is made with two blades and a cork screw. Another group in 3¼-inch size, lower in price, have transparent scales, under which are printed views of the same buildings. In all but the smaller size there is a stereoscopic view in one end in the place of an ordinary rivet, the miniature cylinder in this case serving as a pivot for two of the blades. The concern, likewise, carry out the same ideas in a Paper Cutter, the handles of which, like the scales of the Knives, have World's Fair views in relief.

VONNEGUT HARDWARE COMPANY, Indianapolis, Ind., has secured contracts for furnishing the Hardware required in the following buildings: Eleven-story office building, Louis N. Reibold, Dayton, Ohio; United Brethren, 14-story office building, Dayton, Ohio; National Theater, Dayton, Ohio; United States Court and Custom House, Indianapolis; Indianapolis Terminal & Traction Office Building, 10 stories, Indianapolis; Putnam County Court House, Greencastle, Ind.; Henry County Court House, New Castle, Ind.; Shortridge High School, Indianapolis; Winona Technical Institute Buildings, Winona Lake, Ind.; Physics Building, Purdue University, Lafayette, Ind.; Students' Building, Indiana University, Bloomington, Ind.; Matzke Apartments, Indianapolis; Indiana State Blind Institution dormitory, Indianapolis. As agents for the Barth Mfg. Company, they have also contracted to furnish high speed electrical elevators for the United Brethren and passenger and freight elevators for the Louis N. Reibold office buildings at Dayton.

FACTORY COST AND BUSINESS METHODS.

ENCOURAGING EMPLOYEES TO MAKE SUGGESTIONS.

The following communication from a well-known manufacturer, narrating his gratifying experience with a fully tested plan of awarding cash prizes to employees for suggestions as to the business, will be read with interest:

To the Editor: It affords me very great pleasure to give your readers all the information I can as to my experience with and opinion of the plan introduced in our factory a few years ago—namely, that of giving cash prizes to our employees for inventions or suggestions in the improvement of tools, machinery or method of doing work, or anything that would be of benefit to either employee or employer, or the general business of the concern.

I wish to say just here that both our men and ourselves are satisfied with the plan and we have no idea of abandoning it. I find the men are very much benefited by it. I don't mean on account of the money value of the prize they receive, but they naturally become better and more thoughtful workmen. Studying out these improvements gives them new and useful ideas about tools and machinery and general mechanical devices. Their minds are constantly on the alert in the line of doing work cheaper and better; thus while they work they are being educated in the most practical way in everything pertaining to their business. They become thinking men as well as working men, and every manufacturer or merchant knows that there is a greater demand for *thinking* men than there is for men who are nothing more than *working* men. This education and development along the lines of ingenuity make a man more useful, and consequently he is of more value to himself and his employer.

I notice that the men generally develop into one of two classes, both of which are valuable in any kind of business. One is what we call a "handy man;" he has

Better Workmen

a genius for doing anything you give him to do, has a knack of doing things, and even things he has never seen done before. While he may not do them quite as well as a specialist, he does them quickly and makes a good job of it. The other class of man which our plan develops is the specialist. This class is constantly bringing out improvements in one particular line, and this is generally in the line in which they are working; and if, as is often the case, the men are piece workers, they have a greater incentive to invent tools and methods for getting out the work better and quicker than they otherwise would. Hence it will be readily seen that the prizes, the competition among the men, together with the personal benefit each man knows he is receiving from the education and experience he gets in the line of cultivating his mechanical genius, all contribute to keep up his interest in getting the very best out of himself in this line.

The plan has resulted in a great improvement in our tools and also in our method of doing work as a natural result. Our regular output has been materially increased, and what is better yet, the quality of the finished work is far above what it was previously.

When I first introduced this plan in our factory the principal idea I had about it was to interest and benefit our men. I had no idea of making money out of it, or deriving any benefit from it in any way except for the men. Being something of an inventor myself, and no doubt having the share of egotism or self confidence the average inventor usually has, I thought I was quite able to take care of the inventive genius part of the concern, and I had no expectation of the men suggesting or inventing anything that would be of any great importance, but I soon learned the men had more brains than I gave

them credit for; in fact, some of them had more than they had ever given themselves credit for. I also learned that we had some men in our employ who knew something that I did not, and they only needed the opportunity to bring it out.

The plan has also proved to be of great benefit to our company, not only in the improvement of workmen and tools, and in the production, but from a financial standpoint. We have quite a number of improvements which more than pay for the cash prizes paid to the men.

We do not even pretend to pass as philanthropists in the matter, but as our men are perfectly satisfied with the plan and everything goes along harmoniously, it tends to create a pleasant feeling between us as employers and our employees, and so long as this is the case we shall no doubt consider it to our mutual benefit to continue it.

NEWBURGH, N. Y.

THOS. COLDWELL.

ADVERTISING SUGGESTIONS.

The following announcement appears on a card recently issued by the Phillips & Buttorff Mfg. Company, Nashville, Tenn., with a view to drawing out the employees with suggestions as to advertising the company's product:

Advertising Ads.

THE PHILLIPS & BUTTORFF MFG. CO. has an advertising department. It's located on the fifth floor. Perhaps some of us didn't know it was there.

LISTEN.

The advertising department was begun and brought to its present state of far from perfection as a mouthpiece to the P. & B. employees.

Just as the girl at the switchboard is the recipient and redistributer of the thoughts of thousands, so we wish the advertising department to be the voice through which every P. & B. employee, old and young, rich and poor, will freely speak his views on the business of the company.

How often have you stood in another man's shop and thought, "Seems to me that I could improve things a whole lot if I could get in here about a week." Did it ever occur to you how very glad the proprietor of that shop would be to have your ideas?

They might not be applicable, and again, they might be what he had been seeking for years.

WE WANT YOUR IDEAS.

Send them up. Write them, put them in the basket, and you may rest assured they will be given prompt attention.

And don't feel hurt if they're not used! It's the fate of every man in life to be thrown down again and again. It hurts. But get up again!

Whenever you think of an advertising scheme, of a catchy word or phrase to use in an ad. or a booklet, of an attractive design for some advertisement, or if it strikes you that a certain class of goods that you know to be salable are not being sufficiently pushed, let us know.

We want every one to feel that he or she is a part and member of the advertising department, striving in unison with 500 comrades to build up a business such as the South has never before known.

A SET OF MAXIMS.

A New England manufacturer gives prominence, through the medium of cards inserted in paper weights used on the desks in the company's office, to the following business maxims, which are credited to the elder Baron Rothschild, who is said to have placarded them on the walls of his banking house:

Carefully examine every detail of your business.

Be prompt in everything.

Take time to consider, but decide positively.

Dare to go forward.

Bear troubles patiently.

Be brave in the struggle of life.

Maintain your integrity as a sacred thing.

Never tell business lies.

Make no useless acquaintances.

Never appear something more than you are.

Pay your debts promptly.

*Shun strong liquor.
Employ your time well.
Do not reckon upon chance.
Be polite to everybody.
Never be discouraged.
Then work hard, and you will be certain to succeed.*

OFFICE RECORD OF EMPLOYEES.

A large Western manufacturer keeps an office record of each employee. If the timekeeper or any member of the firm observes any misconduct or improper workmanship, a note is made of same, and the superintendent is directed to advise employee that such record has been made, and unless service is improved a change will be made. The effect of this office record of employees is referred to as far reaching. On the other hand, note is also made of the most faithful and efficient workmen, and it is generally understood throughout the works that when promotions are to be made or wages advanced much depends on the showing of each employee as indicated on the office record.

BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE, }
NORFOLK ST., LONDON, W. C., July 23, 1904. }

The Week's Hardware Trade.

THE holiday seasons are upon us, and we feel their effects. Nothing new is being undertaken, and trade seems to run on its own account without much individual direction. In general, the home trade is slack, but the volume of our foreign and Colonial trade is up to average. In London trade is exceptionally slack, and the greatest activity recently has been on account of Scotland, and that for holiday goods of one sort and another. The English invasion of Scotland takes place every August. Irish orders are satisfactory, and orders from the various watering places are encouraging. We are experiencing magnificent weather, and lodging house keepers are naturally more hopeful, and therefore buy in larger quantities. On overseas account, while the South African trade is more depressed than ever, good business is being done, particularly in Hardware with South America, India and Canada. Australian requirements are on a fairly large scale, but indicate some slight declining tendency which will now probably be more marked as the season advances. From the Argentine we get good indents, and Chile is buying pretty freely. European trade shares the British home dullness, but there are some symptoms of revival apparent in Germany and Holland. Italy has also for some time past been buying in greatly increased quantities, but the Russo-Japanese war is hurting us in our trade with Russia. Axle manufacturers are very busy on orders for India, Australia and the Cape. In the Edge Tool branch plantation and other Hoes are going out in large quantities to India and South America, but there is room for improvement in the demand for Axes and other Edge Tools. German competition in this branch is reported very keen, though the American Axe continues to hold its own in the Australian markets.

Production and Cost of Rifles.

The Secretary for War, in reply to a question from a Member of Parliament as to the number of service Rifles, Lee-Metford and Lee-Enfield, made during the years 1889-1894 at the Royal Small Arms factory, Enfield; the Royal Small Arms factory, Birmingham, and the London Small Arms factory, Old Ford, and the cost per Rifle each year respectively; and whether the cost of establishment, depreciation of plant and machinery are included in the cost of the Rifle at Enfield; whether wages at Enfield are higher than at any other small arms factory, and whether a large amount of subcontracting exists at the present time at the private firms, resulting in the employment of a number of men by subcontractors at low wages, states that the numbers of service Rifles made at Enfield and Birmingham for the years mentioned, and their cost were as follows:

Years.	Number	Enfield Lock.		Birmingham Lock.	
		Price.		Price.	
		£	s. d.	Number.	£ s. d.
1889-90.....	31,238	5	5 0½	4,305	5 18 9
1890-91.....	92,127	3	11 10½	26,957	3 14 5
1891-92.....	42,407	3	11 0	25,837	3 9 2
1892-93.....	35,240	3	14 6½	13,633	3 17 4½
1893-94.....	32,945	3	10 4	15,870	3 14 9

The number made by the London Small Arms Company at Old Ford in the same period was 75,000, and the price per Rifle for the first half of the contract was £5 10s., and for the second half £4 18s. The cost of establishment and depreciation of plant and machinery are included in the cost of the Rifle at Enfield. As regards wages at Enfield, when the difference of rates of wages in different districts and of the scheme of manufacturing in each factory are taken into consideration, the run of wages for rifle works is not higher than at Sparkbrook, but, if anything, it may be said to be rather lower. The rate of wages paid by private firms is not known. There is no subcontracting at the present time of which the War Department is aware.

Openings in Russia and Siberia.

The war will not last forever, and it may be well to keep one's weather eye open for opportunities for opening up business in Russia in general and Siberia in particular. There will undoubtedly later on be a considerable demand for machinery of all sorts in Siberia and eastward. Some of our competitors are profitably employing the present lull in business in carefully studying that country, its requirements and local tastes. Switzerland and Belgium, for instance, do better than formerly, and manage to fall in with Russian desires and taste. It is a disadvantage that the more solidly built British machinery has to pay higher duty than the lighter German and other makes. The United States and Germany seem to be getting more and more of the trade in Steam Pumps of all sorts. They, as well as some French firms in this line, import only the more delicate parts, getting the rougher and heavier parts cast locally, which saves customs duty and enables them to compete favorably with those who send over the complete article. But it appears that the main reasons why our competitors are increasing their business are apparently that, firstly, they have better information about the local standing of individuals and persons than their British competitor possesses, and, secondly, that they are willing to do a more "risky" business than British firms often care to take up. This would lead one to think that some of the smaller and newer firms in the United Kingdom might find that it would pay them to work specially for the Russian market, i.e., have a special Russian section. It should, however, be borne in mind that the Russian market is subject to very rapid fluctuations, a large demand arising and as suddenly ceasing. This would seem to be due to the fact that it works almost exclusively for the needs of Russia itself, and not for the world in general.

The conditions in Siberia would seem very largely to resemble those in Canada—namely, a vast area of land and very few hands available to work it. The comparison also very largely holds good as regards the soil. This being so, Siberia should offer a good field for Canadian Agricultural Implements and Machinery. In this respect the small and light horse—or rather pony—of the country should be always kept in mind.

The main requisites would seem to be: 1, Simplicity of construction. The average agriculturist knows absolutely nothing about machinery, and places where skilled labor for repairs is procurable are few and far between. 2, Lightness; the soil is often heavy, and the Russian pony is small and light. 3, Cheapness and easy terms of payment; for the latter good local knowledge is indispensable. 4, Depots, where the machinery should be visible and where there should be persons who not only thoroughly know their own makes, but should be able to point out their advantages over the wares of their competitors. These persons should be able to explain thoroughly everything in the language of the purchaser, and should keep their principals informed of any minor alterations or improvements introduced by rivals, or in accordance with local requirements. 5, Interchangeable parts; large supplies of these should be kept at all

depots, machinery itself naturally being standardized. 6, Accuracy of manufacture. 7, Simplicity of arrangement.

The question of price enters very largely into the purchase of Agricultural Machinery. The peasant cannot afford long prices, and as a rule can only purchase on the easiest of terms, so that cheapness and lightness are very important factors.

There is already a considerable field for all electrical appliances in Russia, and in the future this will probably become far greater. Germany at present has the largest share. There is a considerable market for machine tools, but a very small amount is made in the country, the rest all coming from abroad, mainly from Germany. What is required is a fairly stout article, as the Russian workman is often rather clumsy. There is a certain amount of British chinaware in the shops, but not very much. The main obstacle seems to be high prices. There should be an opening for fancy tiles. The local firms turn out a lot for decorating stoves, bathroom fittings, &c., and Germany sends a certain amount. Good British makes should find a fair sale. The demand for Bicycles seems to be about the same, and is not likely to increase much locally till the roads are improved. However, there is a considerably increased number of Motor Bicycles to be seen, so they would appear to be in fashion. Bicycles should be fairly solidly constructed, as the roads are usually heavy, and they should be sent over in parts to be put together on the spot.

The interest in photography seems to be on the increase; the smaller and lighter Kodaks, especially the pocket varieties, seem to be preferred.

More business in Sporting Guns could probably be done by means of good, active agents, advertising, &c. The Guns of foreign manufacture in the local shops are mostly German and Belgian. British goods are very highly thought of by Russian sportsmen, but the prices charged put them out of the reach of all except the wealthy.

The reason why German firms so constantly give longer credit than British ones may, to some extent, possibly be explained by the excellent information they obtain from the intelligence bureau in Berlin as to the standing of Russian firms and merchants.

Modern Heating Appliances.

In a recent report by the Canadian commercial agent at Melbourne, it is stated that there is every probability of a demand shortly taking place for Hot Water Steam Radiators and Warm Air Furnaces. Last winter the two principal theaters in that city were heated for the first time, one on the radiator principle, and the other by electricity, the latter not proving very successful. These are the only instances in which an attempt has been made to heat places of amusement in Victoria. The large number of halls, churches, &c., throughout the State are absolutely without heating appliances. Complaints appear from time to time in the press concerning the cold experienced in these buildings.

Hotels and office buildings have only open fireplaces, or very indifferent and objectionable Gas Stoves. The Victorian winter extends from about May until the end of September. There seems to be an opening for an energetic firm to make an effort to place their manufactures on the Victorian market, and to educate the people in the use of modern heating appliances. Successfully to introduce these appliances would require the services of an expert in the business, fully qualified to sell the goods and attend to their installation.

Sheffield Trade with America.

The exports from Sheffield to the United States during the past quarter were valued at £106,567, compared with £112,439 in the previous quarter, and £139,164 during the final quarter of 1903. Details of the chief items of the trading done between the two countries were:

	Quarter ending.		
	June 30, 1904.	March 31, 1904.	June 30, 1903.
Cutlery	£18,534	£14,262	£20,000
Steel	68,113	73,225	111,160
Steel, butchers'	2,087	1,614	2,100
Edge Tools and Razors	1,163	1,289	1,600
Horn	5,645	6,403	4,200
Measuring Tapes	1,474	1,208	2,000
Pearl	2,148	3,276	3,000

NEW ORLEANS NOTES.

FROM A SPECIAL CORRESPONDENT.

FOR the first time in 36 months the Hardware trade in this immediate section is proving less profitable than was anticipated three months before. For the first time in over two years and a half the surprises of the trade have been disagreeable, for ever since the Southern agricultural products began to increase in price in the winter of 1901-02 each season until this summer has proven productive of a volume of business greater than was looked for from the standpoint of the season immediately preceding. This condition seems true of the trade through Mississippi, Louisiana, Eastern Texas and Southern Alabama, and includes in its scope all that section for which New Orleans and New Orleans trade connections would be effective as a criterion. The condition exists in connection with the gradual slackening of price tension for basic goods and the heavier items of trade, but whether in spite of or because of, or merely coincident with it, the local dealers do not attempt to say.

There are several causes ascribed to the situation by those who have the explaining habit; and the Hardware and allied trades, through the local jobbers, assert vehemently that the unpleasant prospects will cease and all outlooks brighten when the crops begin to move in September. The chief causes given are: The over-purchasing indulged in by the trade through the cotton belt during the period of inflated prices, beginning last December and only terminating with the rapid progress of the new crop; the labor troubles in the building trades all through the immediate South, which have upset building activity, caused cessation of a considerable number of the mills through the lumber belt of the Gulf States, and the extreme timidity of the rice planters of the Western Gulf Coast, who are threatened with over-production and a stagnant market. The building trades labor troubles have had a wide effect on the local retail Hardware trade and the activity in building material, structural iron and tools, &c. These several causes have applied in various ways, and have made their effects felt throughout the ramifications of the Hardware and allied trades.

The Cotton Belt.

For the six months ending May 15 the cotton planters reveled in prices for their product which sent them into the very seventh heaven of the purchasers' bliss. All through Mississippi, across Northern Louisiana and into Eastern Texas this condition prevailed. The planters were obtaining for the ragged end of their crop, as they had obtained from the merchants for almost the entire crop, prices at least 4 cents more a pound than the estimate on which the crop had been made. The planters, through the jobbers catering to them, and through their own direct orders to the big wholesale houses in New Orleans and other centers, bought everything they could think of. Complete new outfits of Farming Implements, new Gin House Equipment, new Household Furnishings, new Sheet Roofing—all these were purchased. The people in the country towns and the smaller cities, all living indirectly from the cotton crops, went the same pace, and there was hardly a want left unsupplied by the time the summer set in. The spring business continued at least a month later into the year than ever before. The business houses altered plans, and retained additional working force to accommodate the trade. Then the trade stopped. Carloads of Nails, the mass of Metal Roofing, carloads of all manner of Hardware, ceased to go out. The cotton belt had bought all it wanted, chiefly of the heavier and more substantial goods—the necessities of the Hardware world—and was satisfied.

Saw Mills Cease Running.

Then the building trades labor troubles began in New Orleans. Contracts were scheduled and plans were drawn for building operations to approximate in value \$5,000,000. The carpenters, the painters, the plasterers, the stone masons, the structural iron workers, the lathers, the laborers—all these decided that their share of prosperity was too small, and one after another they struck. They demanded everything in sight, according to the contractors. It was the second season in succession that

the building laborers had taken this course. The contractors refused the demands and retaliated with a counter demand for the open shop. The contest has lasted all summer, with victory seemingly leaning toward the contractors, who have been enabled to do enough work to make both ends meet. However, all the great plans and hopes for the building season came to an end, and the operations of the season are decidedly less than for the summer of 1903, whereas in April the outlook was for a volume of business at least 50 per cent. larger than the year before. The trouble affected the neighboring towns and cities. The local and domestic demand for wooden building material practically ceased. On top of this came the stagnation in the lumber market. By July 15 not a mill in the Southern pine belt was running on full time, and many of them were closed down. Mill supply orders to New Orleans fell fully 30 per cent. below the volume current one year ago. The mills ceased building new roads into fresh timber country, and this caused a cessation of orders for another line of trade. This condition exists now from Mobile to the Texas line, through all the yellow pine belt tributary to New Orleans.

Trepidation in the Rice Country.

Through the rice coast, stretching from the mouth of the Mississippi westward to Galveston and beyond, the midsummer outlook is for an excellent crop. However, the planters found themselves burdened last season with an unwieldy mass of surplus rice, which was disposed of with difficulty and at a considerable loss. This season there has been a concerted effort on the part of the mills, brokers and planters to regulate the sale of the rice, but pending the success of these efforts the rice section is buying carefully and cautiously, while the Hardwaremen are selling with even more care and caution.

The Bright Side.

This for the gloom. When the cotton crop begins to move in September it is expected that the planters will begin purchasing again. The reports indicate an excellent crop, and the price promises to continue to be such that the purchasing power of the country will be fully as great as it was during the year which ended last spring. The Hardware trade expects, so the jobbers assert, to sell fully as much in totals to the cotton country during the coming fall, winter and spring, but in slightly varied lines. Last season the cotton planter bought to a great extent the necessities. This year he will buy the luxuries. Consequently the autumn stocks will run to costlier and better grades of goods.

This trend of feeling is expected to characterize the trade in the entire cotton country, provided the combination of crop and price remains as good as it is at present. The saw mills are expected to resume activity before autumn. The saw mill men assert that the lumber market shows strong signs of regaining its equilibrium by September. The annual summer overhauling of the mills will begin in late August, and a rush business in Mill Supplies and Engine Supplies, &c., is expected to set in at that time, with the full tide of regular business to follow through the autumn and winter. The sugar cane section is threatened with the best cane crop in 20 years. The entire section has been running close to the wind for three years, and a large crop with a fair price this autumn would be the cause of an exceptional Hardware, Implement and Mill Supply business to the entire "sugar bowl." Many of the sugar houses are in need of complete refitting. Many of the plantations require complete outfits of Implements, field railroad equipment, &c. The towns in the cane belt are, of course, in a proportionate condition.

That this outlook is firmly believed in is shown by the attitude of the business houses of New Orleans. While the summer's business is estimated to be running about 5 per cent. less than it did a year ago, yet the larger stores are retaining their full force of regular men, and are not cutting down any permanent expenses.

Grove Hardware Company has purchased the business formerly conducted by Cummings & Clark in Grove, I. T.

AMONG THE HARDWARE TRADE.

"The Fair" is successor to the business formerly conducted by Pfeiffer & Co., Gordon, Neb.

W. B. Jones & Co., Earlham, Iowa, has disposed of its Hardware stock to Jones & Lewis, and will hereafter devote themselves exclusively to the sale of General Hardware.

L. L. Twinam has bought the Hardware, Implement and Buggy business formerly conducted by Wm. Beattie & Son, New London, Iowa.

Edgar Pleukharp has purchased the Hardware, Stove, Implement and Paint business of John M. White, Logan, Ohio.

The store of Johnson & Johnson, Eveland, Iowa, was badly damaged by fire a short time since. The business will be started up again in the near future by Geo. W. Johnson, under his own name.

The Warner Hardware Company, Portage, Wis., has filed an amendment to its articles of incorporation changing its name to the Schulze Hardware Company, and increasing its capital from \$10,000 to \$25,000. L. F. Schulze is president and Frank G. Schulze, secretary.

F. H. Woodworth & Co., wholesale Hardware, Chattanooga, Tenn., whose large and growing business demands larger facilities, will occupy some time in September, after radical alterations are made, the building 619 Market street and 620 Broad street, running through the block. This building, which the firm has recently bought, is 26 feet wide by 200 feet long, four stories and basement, providing floor space of 26,000 square feet. It will be thoroughly renovated and remodeled, a new plate glass front installed, new fixtures, &c., with a view to making it an establishment convenient and up to date in all respects.

The Bigham Hardware & Furniture Company, Gatesville, Texas, has been incorporated with a capital stock of \$10,000, to carry on the retail business.

J. L. Brown has disposed of his Shelf and Heavy Hardware and Harness business in Rosehill, Iowa, to E. E. Ellsworth, who will continue at the old stand.

Omer Snyder, formerly of Pleasant Hill, Ohio, has purchased the business of G. G. Gard, Tremont City, Ohio, dealer in Hardware, Paints, Oils, Builders' Supplies, Lumber, Grain, &c.

The partnership formerly existing between C. Schneider, Jr., and Frederick McAllister in the general Hardware business in Newark, N. J., under the style of C. Schneider, Jr., has been dissolved by mutual consent. The business will be continued under the name of Thornton & Co. Mr. Schneider is intending soon to open up for himself in a new store, where he will handle Hardware, Paints, &c.

H. S. Farnum, Uxbridge, Mass., has opened a branch store at East Douglas, Mass., under the style of H. S. Farnum & Son. This store will be under the management of L. G. Farnum, and will be devoted to the same lines as the parent establishment, including Hardware, Stoves, Plumbing, Heating, &c.

Rankin & Jones, in the Hardware, Stove, Implement, Paint and Harness business at Chanute, Kan., have dissolved. Wallace Rankin continues the business at the old stand under his own name.

C. L. Gibbs, Woodstock, Va., has bought the stock of general merchandise formerly carried by W. T. Mauck, and after closing out all other lines, will carry regularly complete assortments of Hardware, Cutlery, Guns and Stoves.

OLMSTED COUNTY MERCHANTS' ASSOCIATION.

A VERY successful merchants' association is the Olmsted County Merchants' Association, which was organized at Rochester, Minn., on April 22, 1903. The association now embraces merchants doing business in the following towns: Byron, Chatfield, Chester, Douglas, Dover, Enota, Genoa, Horton, Laird, Oronoco, Pleasant Grove, Potsdam, Predmore, Rochester, Rock Dell, Simpson, Stewartville and Viola. At the last annual convention of the Minnesota Retail Hardware Association prominent attention was called to this association by A. T. Stebbins of Rochester, one of its most influential members and now president of the State association.

CREDITS AND COLLECTIONS.

Mr. Stebbins referred particularly to the effectiveness of the county association in the matter of credits and collections, which is, perhaps, the most important department of its work.

In the system adopted by the association a number of forms are used. The first form, reproduced herewith, is sent to a customer when he falls badly behind in his payments:

Name	By Town
Address	Time Given
Occupation	Amount Due, \$

OLMSTED COUNTY MERCHANTS' ASSOCIATION

MEMBERSHIP OF OUR FOLLOWING TOWNS:

Byron	Douglas	Genoa	Oronoco	Potsdam	Stewartville
Chatfield	Enota	Horton	Pleasant Grove	Rock Dell	Viola
Chester	Laird	Predmore	Rochester	Simpson	

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According to our books you are owing us a balance of \$——, which is past due. If this is correct, we would ask prompt payment of same; and if not correct, please notify us at once that it may be adjusted.

If not paid or adjusted within —— days from this date, we shall be obliged to place this claim with the Collection Department of the Olmsted County Merchants' Association for collection.

Yours Truly,

The upper portion of this form is torn off and filed by the merchant.

These letters or forms are put up in pads or books, one of which is furnished free to each member of the association, who must pay 25 cents for each additional book. The books contain 50 forms.

If no response is received from the delinquent customer in the time given, the claim is filed with the secretary for further notices, the first notice reading as follows:

We have a claim against you amounting to \$——, which has been filed with the Collection Department of this association by

Since you have failed to respond to repeated requests for payment of this indebtedness, we would ask if there is any error in the account or any other reason why the claim should not be paid without further delay. If the amount of this claim is too large for you to pay at once we would suggest that you call upon the above mentioned creditor, or communicate with the writer, regarding your ability to meet this obligation by weekly or monthly payments.

Please arrange for immediate settlement of the account or respond to this notice within ten days from this date, thus saving further trouble and expense in the matter.

Very truly yours,

Olmsted County Merchants' Association,

....., Secretary.

The second and final notice from the secretary reads as follows:

Having received no response to our notice of —— we again desire to call your attention to the claim amounting to \$—— filed with us, for collection, by ——

The members of this association, whose names appear

upon the back of this letter, believe that you are disposed to pay your bills promptly, and, for this reason, we do not want to be obliged to report this account unpaid. No doubt you can make some satisfactory arrangement for the future settlement of this account, even though you may be unable to pay it in full at present, and, if so, you should make some response to this notice at once.

Unless we hear from you within ten days from this date we shall assume that you have no inclination to arrange for settlement and the account will be so reported.

We sincerely hope that you will realize the importance of giving this matter the attention it deserves.

Very truly yours,

Olmsted County Merchants' Association,

....., Secretary.

If the last notice fails to elicit any satisfactory reply from the customer in arrears he is listed in the book of delinquent debtors, which is revised and corrected monthly, and is furnished without charge to every member.

Each member pays the association 10 per cent. of the amount collected.

The method described above is, we are advised, working exceedingly well. Accounts have been collected that had been outlawed long since, and the delinquent debtors in nearly every case make strenuous efforts to get their names off the black list. The result has been a constantly increasing promptness on the part of the people of the county to meet their obligations.

CONSTITUTION AND BY-LAWS.

Following are the constitution and by-laws of this interesting and flourishing association:

Constitution.

ARTICLE I.—Name.

Section 1. The name of this organization shall be the Olmsted County Merchants' Association.

ARTICLE II.—Object.

Sec. 1. It shall be the object of this association to further the interests of its members and to promote the welfare of Olmsted County.

ARTICLE III.—Membership.

Sec. 1. This association shall consist of all such retail merchants as are now or may hereafter become members thereof in accordance with the provisions of the constitution and by-laws.

Sec. 2. Any person is eligible to membership who is engaged in business as a retail merchant in Olmsted County and adjoining counties.

ARTICLE IV.—Officers.

Sec. 1. The officers of this association shall be a president, vice-president, secretary, treasurer, and an Executive Committee consisting of one member from each city, town and village holding membership in this association.

Sec. 2. The officers and the Executive Committee shall be elected annually at the first regular meeting in April, and are to hold office until their successors are elected and qualified.

ARTICLE V.—Meetings.

Sec. 1. The annual meeting of this association shall be held on the second Wednesday in April, at such hour and place as the Executive Committee shall designate.

Sec. 2. Twenty-five members, in good standing, shall constitute a quorum to transact business.

Sec. 3. Each firm holding membership in this association shall be entitled to send as many delegates as they desire to the annual meeting of the association.

Sec. 4. Each member shall have but one vote, regardless of the number of delegates representing it, but all delegates shall be entitled to participate in the discussions and debates of the meetings.

ARTICLE VI.—Amendments.

Sec. 1. The by-laws shall be equally binding with the constitution, and no amendment shall be made to either except at a regular meeting of the Executive Committee and in writing.

Sec. 2. All proposed amendments shall be laid over to the next regular meeting of the Executive Committee, when they may be adopted by a concurrence of two-thirds of the members present.

By-Laws.

ARTICLE I.—President's Duty.

Section 1. It shall be the duty of the president to preside at all meetings of the association and of the Executive Committee; to sign all orders drawn upon the treasurer for the payment of such sums of money as may from time to time be voted by the Executive Committee; to sign all certificates and notices as may require his signature to authenticate them, and to have general supervision over the association.

Sec. 2. The president shall, immediately after assuming his office, appoint the following standing committees, to hold office for one year, or until their successors are appointed, each committee to consist of three members:

1. Committee on General Arrangements and Business Affairs.
2. Committee on Claims and Accounts.
3. Committee on Railroads and Freight.
4. Committee on Insurance and Legislation.

ARTICLE II.—Vice-President's Duty.

Sec. 1. It shall be the duty of the vice-president to assist the president, and in his absence to assume the duties of the president.

ARTICLE III.—Secretary's Duty.

Sec. 1. It shall be the duty of the secretary to keep a record of the proceedings of all meetings of the association and of the Executive Committee, and give notice when required of all special meetings. He shall receive all moneys due the association and pay the same over to the treasurer every 30 days.

His books shall be open to inspection by the officers at any time. He shall notify all members of committees within two days of their appointment.

Sec. 2. The secretary shall conduct all correspondence pertaining to the association, and perform such other duties as the Executive Committee may require of him.

Sec. 3. The secretary shall receive for his services such compensation as the Executive Committee may determine.

ARTICLE IV.—Treasurer's Duty.

Sec. 1. The treasurer shall pay all orders drawn on him by order of the Executive Committee, duly signed by the president and countersigned by the secretary.

Sec. 2. At the end of his term of office he shall have his accounts closed and submit a full statement thereof to the association, and shall deliver to his successor in office all moneys, vouchers and property belonging to the association within ten days after his successor is elected and qualified.

Sec. 3. It shall be the duty of the treasurer to report the balance on hand to the Executive Committee when requested.

ARTICLE V.—Duty of Executive Committee.

Sec. 1. It shall be the duty of the Executive Committee to inspect and audit the books and accounts of the secretary and treasurer; to assist the president in the general supervision of the affairs of the association; to make a complete report of the condition of the association at each annual meeting, and perform such other duties as the association may require.

Sec. 2. The Executive Committee shall hold regular quarterly meetings on the second Wednesday in April, July, October and January, at which meetings five members shall constitute a quorum.

Sec. 3. The Executive Committee shall have authority to refer to any of the standing committees such matters of interest to the association as it may deem advisable.

Sec. 4. The Executive Committee shall have power to fill any vacancy that may occur during a regular term of office.

Sec. 5. Special meetings of the Executive Committee may be called at any time by the president of the association, provided a notice of not less than five days be given to each member of the Executive Committee. Five members shall constitute a quorum at any special meeting of the Executive Committee.

ARTICLE VI.—Duties of Standing Committees.

Sec. 1. Each standing committee shall have a chairman, appointed by the president of the association, who shall have authority to call meetings of his committee at any time by giving five days' notice to each member of his committee.

Sec. 2. It shall be the duty of each standing committee to meet and act upon all questions or matters referred to it by the Executive Committee, and make complete reports upon the same at the time specified by the Executive Committee.

ARTICLE VII.—Dues.

Sec. 1. Each member of this association shall pay annually and in advance to the secretary of the association, the sum of \$2, for which he shall be entitled to all benefits of the association.

Sec. 2. Any member of the association who may be in arrears two months shall forfeit all claims to benefits.

ARTICLE VIII.—Assessments.

Sec. 1. The Executive Committee shall have authority to levy assessments upon all members of this association, provided no assessment shall exceed in amount the sum of \$1, and also provided that not more than two assessments shall be made in one year.

ARTICLE IX.—General Order of Business.

- Call to order.
- Reading of minutes of previous meeting.
- Reports of committees.
- Election of members.
- Unfinished business.
- Miscellaneous and new business.
- Election of officers.
- Collection of dues.

The success which has attended this effort to unite merchants in a given locality in an organization for their mutual protection cannot but be suggestive to merchants generally, who are recognizing more and more the necessity for getting together for the advancement of their interests.

Schmidt, Bixler & Blane have purchased the business heretofore carried on by the Okeene Hardware & Implement Company, Okeene, O. T.

TRADE WINNING METHODS.

This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

CATALOGUE OF HOUSE FURNISHINGS.

THE accompanying illustration is a reduced reproduction of one of the pages of "Catalogue of Suggestions of House Furnishing Goods," issued by Theodore Crowell, Kane, Pa., who is locally known as the result of much advertising effort, as "The Hardwareman on the Corner." The cuts of enameled ware, which appeared in this 24 page catalogue, were printed in colors to represent the actual complexion of the goods.

On the inside of the front cover it was explained that this was not designed as a complete catalogue, but was



Suggestions of House Furnishing Goods; a Page from Catalogue of Theodore Crowell; Size of Page 6 x 9 inches.

intended simply as giving hints and suggestions of a few of the goods which Mr. Crowell handled in the line of House Furnishings. The point was made, too, that he was in a position to fit out households complete in this line, and that both the best and the modern priced articles were carried. As to prices, assurance was given that they would be found low enough to warrant purchasing.

SYSTEMATIC CIRCULARIZING

E. P. DE TURK, Kutztown, Pa., who circularizes his territory from time to time, advises us that no other method of outside advertising brings as good results or wins as much trade. Mr. De Turk makes up his mailing list from personal acquaintance and through the tax collectors of the different districts. A recent circular going through the mails as a postal, was in the form of a folder, in which George Washington and his famous hatchet were employed to direct attention to "A Few Truths" concerning the store, as follows:

Truth No. 1. We have the biggest Hardware store in town.

Truth No. 2. We have over 10,000 square feet floor space.

Truth No. 3. We have a greater variety of goods than any other store.

Truth No. 4. We appeal to everybody—high and low—rich and poor—manufacturer, dealer, consumer.

Truth No. 5. Making goods move, that's what we have been doing for the last four weeks. We moved our enormous stock of Hardware, Paints, &c., from the old Hardware stand, just across the street, into our new store. Now these goods have to be moved again as soon as possible—they must be sold.

Truth No. 6. Best of all, we are headquarters in the Hardware business. We keep dependable goods, sell them at a close profit, and everlastingly strive to please our customers.

Another circular recently gotten up by Mr. De Turk carries an assortment of needles in connection with his announcement. This circular was given freely to customers in the store, and in view of its character was much sought after.

A MINNESOTA MERCHANT'S TRADE WINNING METHODS.

IN addition to using a liberal space for advertising in the two local newspapers, C. H. Casey of Jordan, Minn., employs other means to keep his name fresh in the minds of his customers and those whom he desires as customers.

Calendars are sent to each customer, together with a typewritten letter, on the first of the year. This letter extends the compliments of the season, expresses appreciation of their business favors during the year past and respectfully asks a continuance of them for the year about to open. Novelties of various

Calendars and Novelties

June 1, 1892.	June 1, 1903.
<p>As we close our tenth year in the Hardware and Implement business, in Jordan, we feel like expressing our thanks, and appreciation, to our friends, for their liberal patronage, throughout the decade.</p> <p>Our stock and store is now one of the fine ones of the State, our interest just as keen, and our experience ten times what it was when we started. If we have suited you in the past, we ought to please you better from now on.</p> <p>I hope that our business relations in future will be as pleasant as they have been in the past ten years, and that we will see you many, many times before 1913.</p> <p style="text-align: right;">Sincerely your friend, C. H. Casey.</p> <p>Jordan, Minn. June 1, 1903.</p>	

Anniversary Letter.

kinds, such as pencils, yard sticks, pocket combs, boys' caps, fans, &c., are also used, distributed from time to time.

With a view to getting in touch with the prospective wants of his trade, Mr. Casey sends out early in the year a postal card like the one shown herewith.

This is accompanied by a circular letter, from which we make the following extracts to show its scope:

I inclose you a postal card and want to ask you to kindly look it over carefully and check off any article that you are thinking of getting during the coming season. While this will place you under no obligations, it will be of big assistance to me in knowing the probable wants of my customers and, in turn, will be a benefit to you.

My general stock of Hardware is bigger and better than ever. It is, and has been, my aim to handle the best goods that money will buy, for cheap goods are dear at any price.

Again urging you to send in the inclosed card, after marking what you think you will buy; but should it happen that you will not need anything this season, please send it in anyway, as we will watch for an answer from you. Hoping that we will have all or the largest share of your valued patronage this year, and wishing you prosperity and happiness, I have the pleasure to remain, &c.

While less than 50 per cent. of the cards were actually returned, Mr. Casey found that a great many of his customers when in the store would say, "Well, I won't have

DEAR SIR:--Won't you please place an X Mark before each article, named below, that you are liable to purchase this year. This will not place you under any obligations to me.

Sincerely Yours,
C. H. CASEY.

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BUGGIES
WAGONS
WALKING PLOWS
SULKY PLOWS
GANG PLOWS
HARROW
SEEDER
DRILL
CORN PLANTER
CULTIVATOR
WEEDER
Acme Pulverizer
MOWER
HAY RAKE
HAY TEDDER
HAY LOADER
GRAIN BINDER
CORN BINDER
BINDING TWINE
MACHINE OIL
LINSEED OIL
DRY PAINT
MIXED PAINT
WHITE LEAD
PAINT BRUSHES

GASOLINE ENGINE
SEWING MACHINE
Cream Separator
Circular Wood Saw
CORN HUSKER
CORN SHELTER
COOK STOVE
STEEL RANGE
FANNING MILL
FEED GRINDER
FEED COOKER
WOVEN FENCING
POULTRY NETTING
BARBED WIRE
Bee Keepers Supplies
Threshers Supplies
GUNS
Grubbing Machine

I am going to build a _____ about the _____ first of _____ and will give you a chance to figure on the HARDWARE

Name Here _____

P. O. _____

Date _____



Postal Card Inquiry.

to return your card now that I have seen you," and would then go on to tell of some article or articles they would need later on. Enough information was obtained, however, to make the results satisfactory. There was a complete list of the parties to whom cards were sent, this list being numbered to correspond with the numbers on the cards. As the cards were returned, or the parties appeared in person, a memorandum was made of the goods they were in the market for. Subsequently personal letters were sent out, or the parties were called upon.

In June of last year Mr. Casey celebrated the tenth anniversary of the establishment of his Hardware and Implement business. A four-page folder was issued, the first page of which, somewhat reduced, is reproduced herewith.

On the last page, which would be the first seen when taking the folder from its envelope, was

Anniversary Letter

a view of the store and a portrait of the proprietor. Accompanying the folder was a slip $3\frac{3}{4} \times 5\frac{1}{4}$ inches, mentioning Mr. Casey's lines, as follows:

A PARTIAL LIST OF THE GOODS WE CARRY.

<i>Builders' Hardware.</i>	<i>Screen Doors and Windows.</i>
<i>Mechanics' Tools.</i>	<i>Majestic Steel Ranges.</i>
<i>Silver Plated Ware.</i>	<i>Garland Stoves.</i>
<i>Nickel Plated Ware.</i>	<i>Cream Separators, Churns.</i>
<i>Holiday and Wedding Presents.</i>	<i>Washing Machines, Grindstones.</i>
<i>Pocket and Table Cutlery.</i>	<i>Buggies, Carriages.</i>
<i>Scissors and Shears.</i>	<i>Bicycles, Bicycle Sundries.</i>
<i>Razors, Clocks, Ornaments.</i>	<i>Woven Wire Fencing.</i>
<i>Guns, Rifles, Revolvers.</i>	<i>Feed Cokers and Grinders.</i>
<i>Hunters' Clothing.</i>	<i>Gasoline Engines.</i>
<i>Baseball Goods.</i>	<i>Wind Mills, Pumps.</i>
<i>Athletic Goods.</i>	<i>Stump Pullers.</i>
<i>Lawn Mowers and Swings.</i>	<i>Paint, Oil, Varnish.</i>
<i>Ice Cream Freezers, Refrigerators.</i>	<i>White Lead, Brushes.</i>

EVERYTHING IN FARM MACHINERY.

All the foregoing relates to outside advertising. In the store the endeavor is made to keep the windows attractive, the store neat and clean, and everything inside is done to make customers welcome, regardless of whether they come to visit or to purchase goods.

Inside signs, price cards, &c., are used; seasonable goods are displayed on the counters and tables throughout the store; every precaution is taken against having standard articles priced higher than they are by competitors, and the stock is kept complete at all times.

PECK, STOW & WILCOX COMPANY'S TOOL CATALOGUE.

THE PECK, STOW & WILCOX COMPANY, Southington, Conn., and 27 Murray street, New York, has just issued an illustrated catalogue of 100 pages, in which is grouped a wide assortment of Fine Tools for the carpenter, machinist, electrician, mechanic and farmer; other lines, including Tinners' Tools and machines, stationers' Hardware, House Furnishing Goods and General Hardware being shown in other catalogues. There are a number of additions to the lines, making them very comprehensive and complete. A large edition of the new catalogue has been provided, so that dealers can distribute them freely among desirable customers.

MISCELLANEOUS NOTE.

Dixon's Carnival Assortment Pencils.

The Joseph Dixon Crucible Company, Jersey City, N. J., and 68 Reade street, New York, is now putting on the market an attractive lead pencil novelty, to be known as Dixon's Carnival Assortment No. 466. The pencils are hexagon in shape, with round gilt or bronzelike tips and gray rubbers. Each dozen package contains one pencil each finished partially in white, the remainder being red, another one green, blue, canary, cerise and lavender and white. The other combinations in the dozen are black for a portion and purple, pink, yellow, red and cerise, and green and red. In other words, six of the pencils have white and five have black in combination with the colors mentioned, varying with each pencil, thus making a striking assortment. They are put up in boxes of six dozen each.

Rollman Food Chopper No. 15.

The Rollman Mfg. Company, Mount Joy, Pa.—John H. Graham & Co., 113 Chambers street, New York, selling agents—is offering a new and enlarged size of its food chopper, herewith illustrated. Among the particular points of merit are the following: The handle is of steel, which is alluded to as something entirely new; the clamp construction, which fastens the chopper securely and immovably to a table; the wing nut, for attaching the handle to the worm, is a duplicate of the one that holds the cutters in place; the clamp screw and the thumb wings to the screw, as well as the washer, which clamps under the table, are all of steel. The chopper is provided with four cutters—coarse, medium, fine and nut

butter cutters. The opening and easy cleaning feature is the same as in the company's Nos. 11 and 12 choppers.

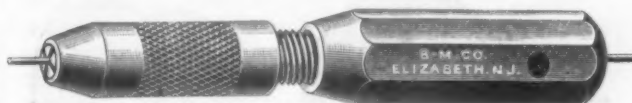


Rollman Food Chopper No. 15.

The point is made that the chopper is light in weight, compared with its capacity and size.

B-M Pin Vise.

Braunsdorf-Mueller Company, Elizabeth, N. J., are placing on the market the pin vise herewith illustrated. The chuck is knurled to afford a good grip for the hand; the jaws are made of tool steel, hardened, and the handle is of octagon shape, enabling it to be clamped in a vise. The tool can be used as a tap wrench by inserting a pin

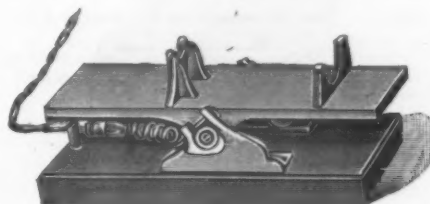


B-M Pin Vise.

in the hole in the handle. In connection with drill work it may be used for holding drills when drilling center holes. The hand, it is remarked, is relieved from strain by inserting a pin in the cross hole in the handle and resting it on the tool post of the lathe.

Electric Soldering Iron Automatic Rheostat Stand.

In many cases it is necessary or desirable to have an electric soldering iron ready for occasional use, and to meet this demand in an economical and satisfactory manner the Simplex Electric Heating Company, Cambridge, Mass., is offering the automatic stand illustrated herewith. Placing the soldering iron on the stand reduces



Soldering Iron Automatic Rheostat Stand.

the current one-half, leaving sufficient to keep the iron hot, yet fully protects it from overheating, no matter how long it remains. Removing the iron restores the full supply of current to the working tool. The point is made that electric soldering coppers need the protection afforded by this device when they are required for shop use. The stand saves current, protects the soldering iron from injurious overheating, and provides a suitable receptacle for it.

Screen Door Catch No. 77.

We illustrate in Fig. 1 a new screen door catch being placed on the market by the Hardware Supply Company, Grand Rapids, Mich. The catch is used independently of any knob, as its double beveled spring bolt automatically latches the door and holds it in a closed position, and to open the door one needs only to push or pull it, the catch offering only sufficient resistance to prevent the door blowing open. If it is desired to lock the door, the wire loop is placed in the position indicated in the cut, and to



Fig. 1.—Screen Door Catch No. 77.

unlock it the loop is thrown back as indicated by the dotted lines. The customary hook and eye are therefore unnecessary when this catch is used. The catch is also useful in holding the door in position, even if it becomes warped sufficiently to throw the ordinary latch out of engagement with its lock. The knob illustrated in Fig. 2 has no connection with the catch, but is made by the same company. To insure against its working loose, two escutcheon pins are driven through the base, which, in addition to the screw of the knob, hold it so that it cannot turn or work loose. Fig. 3 illustrates a new cast brass



Fig. 2.—Screen Door Knob

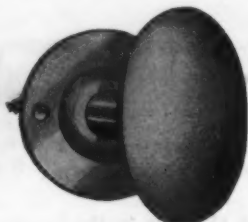


Fig. 3.—Cast Brass or Bronze Knob.

or bronze knob of Colonial pattern, made by the same firm for fine cabinet use. This knob has the same device for securing it to the door.

New Hawkeye Refrigerator Basket.

The Burlington Basket Company, Burlington, Iowa, is placing on the market a small size of its Hawkeye refrigerator basket, for carrying individual lunches, infants' food, &c. Like the large size, it is practically a light, portable ice chest. The basket is made of rattan, with a rust proof lining and asbestos and hair felt in-



New Hawkeye Refrigerator Basket.

sulation between the lining and the rattan. At one end of the basket is an ice box or compartment made of rust proof metal, and at the top is a removable cover, breaking on hinges in the middle, lined with metal, felt and asbestos, and edged with a strip of felt to make the basket air and water tight. The company describes this basket in a dainty pamphlet entitled "Good Lunches and How to Keep Them Good."

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Current Hardware Prices.

REVISED AUGUST 2, 1904

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33 1/2 @ 33 1/2 & 10% signifies that the

price of the goods in question ranges from 33 1/2 per cent. discount to 33 1/2 and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1904, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Abrasives—

Adamite in Carloads: \$ ton \$90@100
Crayalite..... \$ ton \$120@140
Grain..... \$ ton \$120@140
See also Emery.

Adjusters, Blind—

Domestic, 1/2 doz. \$3.00..... 33 1/2
North's..... 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent..... 35%
Taplin's Perfection..... 35%

Ammunition—See Caps, Cartridges, Shells, etc.

Anvils—American—
Eagle Anvils..... \$ 7 1/2 @ 7 1/4
Hay-Budden, Wrought..... 9 @ 9 1/4
Horseshoe brand, Wrought..... 9 @ 9 1/4
Trenton..... \$ 9 @ 9 1/4

Imported—

Peter Wright & Sons..... \$ 10 1/2 @ 10 1/4

Anvil, Vise and Drill—

Millers Falls Co. \$18.00..... 15 & 10%

Apple Parers—See Parers, Apple, etc.

Aprons, Blacksmiths'—

Hull Bros. Co..... 30%
Livingston Nail Co..... 30%

Augers and Bits—

Com. Double Spur..... 75 @ 75 & 5%
Boring Machine Augers..... 66 1/2 @ 70%
Cur Bits, 12-in. twist..... 60 @ 60 & 10%
Jennings' Pattern..... 60 @ 60 & 10%
Ford's Auger and Car Bits..... 40 & 5%
Forster Pat. Auger Bits..... 25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list..... 25%
No. 30, R. Jennings' list..... 25%
Russell's Jennings' list..... 25%
L'Hommedieu Car Bits..... 15%
Mayhew's Counter Sink Bits..... 45%
Millers' Falls..... 50 @ 50 & 10%
Ohio Tool Co.'s Bailey Auger and Car Bits..... 40 & 10%
Pugh's Black..... 30%
Pugh's Jennings' Pattern..... 35%
Snell's Auger Bits..... 60%
Snell's Bell Hangers' Bits..... 60%
Snell's Car Bits, 12-in. twist..... 60%
Wright's Jennings Bits (R. Jennings' list)..... 50%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Clark's small, \$10; large, \$20..... 50 & 10%
Clark's Pattern, No. 1, \$20..... 25%
No. 2, \$18..... 50 & 10%
Ford's, Clark's Pattern..... 50 & 10%
C. E. Jennings & Co., Steer's Pat..... 25%
Swan's..... 60%

Glimet Bits—

Common Double Cut, gro. \$3.00 @ \$2.50
German Pattern, gro. \$4.50 @ \$4.75

Hollow Augers—

Bonney Pattern, per doz. \$10.00 @ \$11.00
Amos..... 25 & 10%
New Patent..... 35 & 10%
Universal..... 20%
Wood's Universal..... 25%

Ship Augers and Bits—

C. E. Jennings & Co.:
L'Hommedieu's..... 15%
Watrous'..... 35 & 5%
Ohio Tool Co.'s..... 40%
Snell's..... 40%

Awl Hafts, See Hafts, Awl.

Awls—

Brad Awls:
Handled..... gro. \$2.75 @ 3.00
Unhandl'd, Shouldered, gro. \$2.50 @ 2.75
Unhandl'd, Patent..... gro. \$2.50 @ 2.75
Peg Awls:
Unhandl'd, Patent..... gro. \$1.50 @ 1.75
Unhandl'd, Shouldered, gro. \$1.50 @ 1.75
Scratch Awls:
Handled, Common, gro. \$3.50 @ 4.00
Handled, Socket, gro. \$11.50 @ 12.00
Huswood..... 40%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

Single Bit, base weights (up to 3 1/2 lb.)
First Quality..... \$6.25 @ 6.50
Second Quality..... \$5.75 @ 6.00
Axle Grease—See Grease, Axle

Axles—

Concord, Loose Collar..... 5 @ 5 1/4
Concord, Solid Collar..... 5 @ 5 1/4
No. 1 Common..... 4 @ 4 1/4
No. 1 1/2 Com. New Style..... 4 1/2 @ 5
No. 2 Solid Collar..... 4 1/2 @ 5 1/4
Nos. 7, 8, 11 and 12..... 6 @ 5 @ 6 @ 10%
Nos. 13 to 14..... 6 @ 5 @ 6 @ 10%
Nos. 15 to 18..... 8 @ 10 @ 70%
Nos. 19 to 22..... 8 @ 10 @ 70%

Boxes, Axle—

Common and Concord, not turned..... 1/2 lb. 4 @ 4 1/4
Common and Concord, turned..... 1/2 lb. 5 @ 5 1/4
Half Patent..... 1/2 lb. 9 @ 9 1/4

Bait— Fishing—

Hendryx..... 30%
Bait..... 25%
Competitor Bait..... 30 & 5%

Balances— Sash—

Caldwell new list..... 50%
Fellman..... 50 & 10 @ 60%

Spring—

Spring Balances..... 60 @ 60 & 5%
Chattillon's:
Light Spg. Balances..... 40 & 10%
Straight Balances..... 40%
Circular Balances..... 50%
Large Dial..... 30%

Barb Wire—See Wire, Barb.

Bars— Crow—

Steel Cranebars, 10 to 50 lb., per lb. 3 @ 3 1/2

Towel—

No. 10 Ideal, Nickel Plated..... \$ gro. \$9.50

Beams, Scale—

Scale Beams, List Jan. 12, '82, 100 @ 10%
Chattillon's No. 1..... 30%
Chattillon's No. 2..... 40%

Beaters— Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered 1/2 doz. \$0.85;
Tinned..... \$1.00
No. 11 Wire Coppered 1/2 doz. \$1.10;
Tinned..... \$1.20
No. 10 Wire Galvanized 1/2 doz. \$1.75
Western W. G. Co.:
No. 1 Electric..... \$ gro. \$7.50
No. 2 Buffalo..... \$ gro. \$9.00
No. 3 Perfection Dust..... \$ gro. \$8.00

Egg—

Holt-Lyon Co.:
Holt, No. A, Japanned..... \$ doz. \$1.20
Holt, No. 1, Tinned..... \$ doz. \$1.50
Holt, No. B, Japanned..... \$ doz. \$2.00
Holt, No. 2, Tinned..... \$ doz. \$2.25
Lyon, No. 2, Japanned..... \$ doz. \$1.25
Lyon, No. 3, Japanned..... \$ doz. \$1.50
Taplin Mfg. Co.:
No. 69 Improved Dover..... \$ doz. \$0.50
No. 75 Improved Dover..... \$ doz. \$0.50
No. 100 Improved Dover..... \$ doz. \$0.70
No. 102 Improved Dover..... \$ doz. \$0.70
No. 150 Improved Dover, Hotel, T.D., \$17.00
No. 200 Improved Dover Tumbler..... \$ doz. \$8.50
No. 202 Improved Dover Tumbler..... \$ doz. \$8.50
No. 300 Improved Dover Mammoth..... \$ doz. \$15.00
Western W. G. Co., Buffalo..... \$ doz. \$7.00
Wonder (S. S. & Co.), \$ gro. net, \$6.00

Bellows—

Blacksmith, Standard List, 75 @ 75 & 5%

Blacksmiths'—

Inch..... 30 32 34 36 38 40
Each..... \$3.50 3.75 4.00 4.25 4.50 4.75

Extra Length—

Each..... \$4.00 4.50 5.00 5.50 6.00 6.50 7.00

Molders—

Inch..... 10 12 14
Doz..... \$3.50 10.00 13.00

Hand—

Inch..... 6 7 8 9 10
Doz..... \$4.25 4.50 5.00 5.50 6.00 6.50 7.00

Bells— Cow—

Ordinary goods..... 75 @ 75 & 10%
High grade..... 70 @ 70 & 10%
Jersey..... 75 @ 75 & 10%
Texas Star..... 50%

Door—

Abbe's Gong..... 45%
Barton Gong..... 45%
Home, R. & E. Mfg. Co.'s..... 55 & 10%
Lever and Pull, Sargent's..... 60 & 10%
Yankee Gong..... 35%

Hand—

Hand Bells, Polished, Brass..... 60 & 10 @ 60 & 10%

White Metal—

Nickel Plated..... 50 @ 50 & 5%
Swiss..... 60 @ 60 & 7 1/2%
Cone's Glue Hat Bells..... 35 @ 35 & 10%
Silver Chime..... 35 @ 35 & 10%

Miscellaneous—

Farm Bells..... 1/2 lb. 2 1/4 @ 2 1/2
Steel Alloy Church and School..... 50 @ 50 & 5%
American Tube & Stamp'g Co. Gongs, 75%
Table Call Bells..... 50 @ 50 & 10%
Trip Gong Bells..... 35 @ 35 & 10%

Belting— Rubber—

Agricultural (Low Grade)..... 75 @ 75 & 5%
Common Standard..... 70 @ 70 & 10%
Standard..... 65 @ 70%
Extra..... 60 @ 50 & 10%
High Grade..... 50 @ 50 & 10%

Leather—

Extra Heavy, Short Lap..... 60 @ 60 & 5%
Regular Short Lap 60 @ 60 & 10%
Standard..... 70 @ 70 & 5%
Light Standard..... 70 @ 70 & 5%
Cut Leather Lacing..... 60 @ 60 & 10%
Leather Lacing Sides, per sq. ft., 15c

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender..... 40%
Green River Tire Benders and Upsetters..... 20%
Detroit Stoddard's Lightning Tire Upsetters:
No. 1, \$4.25; No. 2, \$7.25; No. 3, \$10.50; No. 4, \$16.25; No. 5, \$30.50.

Bicycle Goods—

John S. Lang's Son's 1902 list:
Chain..... 50%
Parts..... 50%
Spokes..... 50%
Tub..... 60%

Bits—

Auger, Glimet, Bit Stock Drills, etc.—
See Augers and Bits.

Blocks— Tackle—

Common Wooden..... 70 @ 70 & 5%
Hollow Steel Blocks, with Ford's Patent 3-way..... 50 & 10%
Lane's Patent Automatic Lock and Junior..... 30%
Stowell's Novelty, Mal. Iron..... 50 & 10%
Stowell's Self Loading..... 60%
See also Machines, Hoisting.

Boards, Stove—

Zinc, Crystal, etc..... 30 @ 30 & 10 @ 40 & 10%

Boards, Wash—

See Washboards.

Boils—

Carriage, Machine, &c.—
Common Carriage..... 75 @ 75 & 5%
Phillips, Eagle, \$3.00 list May 24, '98..... 80 @ 10%

Bolt Ends, list Feb. 14, '95..... 75 @ 75 & 5%

Machine with C. & T. Nuts..... 75 @ 75 & 5%
Machine with C. & T. Nuts..... 70 @ 70 & 5%

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:
Inch..... 3 4 5 6 8
Per doz..... \$0.25 .30 .35 .40 .45

Cast Iron Spring Foot:
Inch..... 6 8 10
Per doz..... \$1.00 1.25 1.75

Cast Iron Chain, Flat, Japanned:
Inch..... 6 8 10
Per doz..... \$0.75 1.05 1.30

Cast Iron Shutter, Brass Knob:
Inch..... 6 8 10
Per doz..... \$0.57 .80 1.00

Wrt Barrel, Jap'd, 75 @ 75 & 10 @ 75 & 10%
Wrought..... 100 @ 100 & 50 @ 50 & 10%
Wrought Flush, B. K., 50 @ 50 & 10 @ 50 & 10%
Wrought Shutter..... 40 @ 40 & 10 @ 40 & 10%
Wrought Square Neck..... 50 @ 50 & 10 @ 50 & 10%
Wrought Sink, Flush..... 50 @ 50 & 10 @ 50 & 10%
Ives' Patent Door..... 60%

Stove and Plow—

Plow..... 65 @ 65 & 10 @ 65 & 10%
Stove..... 30 @ 30 & 10 @ 30 & 10%

Tire—

Common..... 75 @ 75 & 10 @ 75 & 10%
Norway Iron..... 80 @ 80 & 10 @ 80 & 10%
American Screw Company..... 80 @ 80 & 10 @ 80 & 10%
Norway Phila., list Oct. 16, '94..... 80%

Eagle Phila., list Oct. 16, '94..... 82 1/2%

Bay State, list Dec. 23, '99..... 72 1/2%

Franklin Moore Co.:
Norway Phila., list Oct. 16, '94..... 80%

Eagle Phila., list Oct. 16, '94..... 82 1/2%

Eclipse, list Dec. 23, '99..... 72 1/2%

Russell, Burdall & Ward Bolt & Nut Co.

Empire, list Dec. 23, '99..... 72 1/2%

Norway Phila., list Oct. '94..... 80%

Onion Nut Co.:
Tire Bolts..... 72 1/2%

Borers, Tap—

Borers Tap, Ring, with Handle:
Inch..... 1 1/4 1 3/4 2 1/4 2 3/4 3 1/4 3 3/4 4 1/4 4 3/4 5 1/4 5 3/4 6 1/4 6 3/4 7 1/4 7 3/4 8 1/4 8 3/4 9 1/4 9 3/4 10 1/4 10 3/4 11 1/4 11 3/4 12 1/4 12 3/4 14 1/4 14 3/4 16 1/4 16 3/4 18 1/4 18 3/4 20 1/4 20 3/4 22 1/4 22 3/4 24 1/4 24 3/4 26 1/4 26 3/4 28 1/4 28 3/4 30 1/4 30 3/4 32 1/4 32 3/4 34 1/4 34 3/4 36 1/4 36 3/4 38 1/4 38 3/4 40 1/4 40 3/4 42 1/4 42 3/4 44 1/4 44 3/4 46 1/4 46 3/4 48 1/4 48 3/4 50 1/4 50 3/4 52 1/4 52 3/4 54 1/4 54 3/4 56 1/4 56 3/4 58 1/4 58 3/4 60 1/4 60 3/4 62 1/4 62 3/4 64 1/4 64 3/4 66 1/4 66 3/4 68 1/4 68 3/4 70 1/4 70 3/4 72 1/4 72 3/4 74 1/4 74 3/4 76 1/4 76 3/4 78 1/4 78 3/4 80 1/4 80 3/4 82 1/4 82 3/4 84 1/4 84 3/4 86 1/4 86 3/4 88 1/4 88 3/4 90 1/4 90 3/4 92 1/4 92 3/4 94 1/4 94 3/4 96 1/4 96 3/4 98 1/4 98 3/4 100 1/4 100 3/4 102 1/4 102 3/4 104 1/4 104 3/4 106 1/4 106 3/4 108 1/4 108 3/4 110 1/4 110 3/4 112 1/4 112 3/4 114 1/4 114 3/4 116 1/4 116 3/4 118 1/4 118 3/4 120 1/4 120 3/4 122 1/4 122 3/4 124 1/4 124 3/4 126 1/4 126 3/4 128 1/4 128 3/4 130 1/4 130 3/4 132 1/4 132 3/4 134 1/4 134 3/4 136 1/4 136 3/4 138 1/4 138 3/4 140 1/4 140 3/4 142 1/4 142 3/4 144 1/4 144 3/4 146 1/4 146 3/4 148 1/4 148 3/4 150 1/4 150 3/4 152 1/4 152 3/4 154 1/4 154 3/4 156 1/4 156 3/4 158 1/4 158 3/4 160 1/4 160 3/4 162 1/4 162 3/4 164 1/4 164 3/4 166 1/4 166 3/4 168 1/4 168 3/4 170 1/4 170 3/4 172 1/4 172 3/4 174 1/4 174 3/4 176 1/4 176 3/4 178 1/4 178 3/4 180 1/4 180 3/4 182 1/4 182 3/4 184 1/4 184 3/4 186 1/4 186 3/4 188 1/4 188 3/4 190 1/4 190 3/4 192 1/4 192 3/4 194 1/4 194 3/4 196 1/4 196 3/4 198 1/4 198 3/4 200 1/4 200 3/4 202 1/4 202 3/4 204 1/4 204 3/4 206 1/4 206 3/4 208 1/4 208 3/4 210 1/4 210 3/4 212 1/4 212 3/4 214 1/4 214 3/4 216 1/4 216 3/4 218 1/4 218 3/4 220 1/4 220 3/4 222 1/4 222 3/4 224 1/4 224 3/4 226 1/4 226 3/4 228 1/4 228 3/4 230 1/4 230 3/4 232 1/4 232 3/4 234 1/4 234 3/4 236 1/4 236 3/4 238 1/4 238 3/4 240 1/4 240 3/4 242 1/4 242 3/4 244 1/4 244 3/4 246 1/4 246 3/4 248 1/4 248 3/4 250 1/4 250 3/4 252 1/4 252 3/4 254 1/4 254 3/4 256 1/4 256 3/4 258 1/4 258 3/4 260 1/4 260 3/4 262 1/4 262 3/4 264 1/4 264 3/4 266 1/4 266 3/4 268 1/4 268 3/4 270 1/4 270 3/4 272 1/4 272 3/4 274 1/4 274 3/4 276 1/4 276 3/4 278 1/4 278 3/4 280 1/4 280 3/4 282 1/4 282 3/4 284 1/4 284 3/4 286 1/4 286 3/4 288 1/4 288 3/4 290 1/4 290 3/4 292 1/4 292 3/4 294 1/4 294 3/4 296 1/4 296 3/4 298 1/4 298 3/4 300 1/4 300 3/4 302 1/4 302 3/4 304 1/4 304 3/4 306 1/4 306 3/4 308 1/4 308 3/4 310 1/4 310 3/4 312 1/4 312 3/4 314 1/4 314 3/4 316 1/4 316 3/4 318 1/4 318 3/4 320 1/4 320 3/4 322 1/4 322 3/4 324 1/4 324 3/4 326 1/4 326 3/4 328 1/4 328 3/4 330 1/4 330 3/4 332 1/4 332 3/4 334 1/4 334 3/4 336 1/4 336 3/4 338 1/4 338 3/4 340 1/4 340 3/4 342 1/4 342 3/4 344 1/4 344 3/4 346 1/4 346 3/4 348 1/4 348 3/4

Can Openers—See Openers, Can Cans, Milk—

Illinois Pattern, \$1.35 1.55 2.05 each.
New York Pattern, 1.50 2.20 2.45 each.
Baltimore Pattern, 1.50 2.20 2.45 each.
Dubuque, 1.35 1.60 1.75 each.

Cans, Oil—

Buffalo Family Oil Cans:
3 10 gal.
\$45.00 60.00 120.00 gro., net

Caps—Percussion—

Eley's E. B. 60c
G. D. per M 34@35c
F. J. per M 40@45c
G. E. per M 50@55c
Musket per M 60@65c

Primers—

Berdan Primers, \$2.00 per M. 20¢5
B. L. Caps (Sturtevant Shells)
\$2.00 per M. 20¢5
All other primers per M. \$1.50@1.60

Cartridges—

Blank Cartridges:
38 C. F., \$5.50 10¢55
38 C. F., \$7.00 10¢55
38 cal. Rim, \$1.50 10¢55
38 cal. Rim, \$2.75 10¢55
B. B. Caps, Con., Ball Sngd. \$1.90
B. B. Caps, Round Ball \$1.60
Central Fire 25¢
Target and Sporting Rifle 15¢55
Primed Shells and Bullets 15¢10¢
Rim Fire Sporting 50¢
Rim Fire Military 15¢55

Castors—

Red 70¢70¢10¢
Plate 60¢55¢60¢10¢
Philadelphia 75¢75¢55¢
Acme Ball Bearing 39¢45¢
Boss 70¢10¢
Boss Anti-Friction 70¢10¢
Gem (Roller Bearing) 80¢
Martins Patent (Phoenix) 45¢
Standard Ball Bearing 45¢
Tucker's Patent, low list 80¢
Yale (Double Wheel) low list 30¢

Cattle Leaders—

See Leaders, Cattle.

Chain, Coil—

American Coil, Jobbers' Shipments:
3-16 3/4 6-16 3/4 7-16 3/4 9-16 3/4
8-00 5-30 4-15 3-75 3-60 3-50 3-45
3/4 3/4 3/4 1 to 1 1/4 inch.
3-30 3-35 3-50 3-15 per 100 lb.
German Coil 60¢10¢10¢

Halters and Ties—

German Pattern Halter Chains, list
July 24, '97 60¢10¢10¢
Cow Ties 60¢10¢10¢

Trace, Wagon, &c.—

Traces, Western Standard: 100 pair
6 1/2—6 1/2, Straight, with ring . . . \$35.50
6 1/2—6 1/2, Straight, with ring . . . \$35.50
6 1/2—6 1/2, Straight, with ring . . . \$35.50
6 1/2—6 1/2, Straight, with ring . . . \$35.50
Add 2¢ per pair.
Traces, Wagon and Pony Chains, 60¢55¢60¢10¢55¢

Miscellaneous—

Jack Chain, list July 10, '93:
Iron 60¢10¢60¢10¢55¢
Brass 60¢10¢60¢10¢10¢
Safety Chain 75¢75¢10¢55¢
Gal. Pump Chain 10¢44¢44¢
Covert Mfg. Co.
Braid 40¢25¢
Baiter 40¢25¢
Reel 40¢25¢
Rein 40¢25¢
Stallion 40¢25¢

Covert Sads, Works—

Braid 70¢
Baiter 70¢
Hold Back 70¢
Rein 70¢
Onions Community:
Am. Coil and Halters 40¢40¢55¢
Am. Cow Ties 45¢50¢
Eureka Coil and Halters 45¢50¢55¢
Niagara Coil and Halters 45¢50¢55¢
Niagara Cow Ties 45¢50¢10¢55¢
Niagara Wire Dog Chains 45¢50¢55¢

Wire Goods Co.—

Dog Chain 70¢10¢
Universal Dr. Jointed Chain 30¢

Chalk—(From Jobbers.)

Carpenters' Blue gro. 40¢
Carpenters' Red gro. 35¢
Carpenters' White gro. 30¢
See also Crayons.

Checks, Door—

Bardley's 45¢
Columbia 50¢10¢
Belmont 60¢10¢

Chests, Tool—

American Tool Chest Co.
Boys' Chests, with Tools 35¢
Youths' Chests, with Tools 30¢
Gentlemen's Chests, with Tools 30¢
Farmers', Carpenters', etc., Chests, with Tools 30¢
Machinists' and Fitters' Chests 30¢
Empty 30¢
C. E. Jennings & Co.'s Machinists' Tool Chests 33¢45¢10¢

Chisels—

Socket Framing and Firmer Standard List 70¢70¢10¢
Buck Bros. 30¢
Charles Buck 30¢
C. E. Jennings & Co. Socket Firmer No. 10 60¢
C. E. Jennings & Co. Socket Framing No. 15 60¢
Ohio Tool Co. 70¢
Swan's 70¢
L. & J. White 30¢30¢35¢

Tanged—

Tanged Firmers 40¢55¢40¢10¢
Buck Bros. 30¢
Charles Buck 30¢
C. E. Jennings & Co. Nos. 191, 181 25¢
L. & J. White, Tanged 25¢55¢

Cold—
Cold Chisels, good quality, lb. 15¢15¢
Cold Chisels, fair quality, lb. 11¢11¢
Cold Chisels, ordinary, lb. 9¢10¢

Chucks—

Beach Pat., each \$8.00 35¢55¢
Pratt's Positive Drive 25¢
Empire 25¢
Blacksmiths 25¢
Independent Lathe Chucks 50¢
Universal 50¢
Combination 50¢
Drill Chucks, New Model 50¢
Drill Chucks, Standard 40¢
Drill Chucks, Skinner Patent, 3, 4, 5, 6, 7, 8 30¢
Drill Chucks, Positive Drive 30¢
Planer Chucks 25¢
Face Plate Jaws 40¢
Standard Tool Co.:
Improved Drill Chuck 45¢
Union Mfg. Co.:
Combination 50¢
Clear Drill 35¢
Combination Geared Scroll 45¢
Geared Scroll 45¢
Independent 50¢
Independent Steel 40¢
Union Drill 45¢
Universal 50¢
Independent Iron Face Plate Jaws 40¢
Independent Steel Face Plate Jaws 40¢
Westcott Patent Chucks:
Lathe Chucks 50¢
Little Giant Auxiliary Drill 50¢
Little Giant Double Grip Drill 50¢
Little Giant Drill, Improved 50¢
Onida Drill 50¢
Scroll Combination Lathe 50¢

Clamps—

Adjustable, Hammers 20¢20¢55¢
Cabinet, Sargent's 50¢10¢
Carriage Makers', P. & W. Co. 50¢
Carriage Makers' Sargent's 60¢
Besly, Parallel 35¢45¢
Lineman's Utility Drop Forge & Tool Co. 40¢
Saw Clamps, see Vises, Saw Files.

Cleaners, Drain—

Iwan's Champion, Adjustable 35¢
Iwan's Champion, Stationary 40¢

Sidewalk—

Star Socket, All Steel \$4.05 net
Star Shank, All Steel \$3.24 net
W. & C. Shank, All steel, 7 1/2 in., \$3.00; 8 in., \$3.25.

Cleavers, Butchers'—

Foster Bros. 30¢
New Haven Edge Tool Co. 30¢
Payette R. Plumb 33¢45¢10¢
L. & J. White 30¢

Clippers—

Chicago Flexible Shaft Company:
1902 Chicago Horse \$6.75
1902 Chicago Horse \$10.75
1902 Chicago Horse, each, \$5.00 20¢
Lightning Belt \$15.00
Chicago Belt \$20.00
Stewart's Patent Sheep \$18.50

Finger Nail Clippers—

Smith & Hemenway Co. doz. net \$2.00

Clips, Axle—

Eagle 5-16 and 3/4 inch 75¢75¢10¢
Norway, 5-16 and 3/4 inch 60¢10¢70¢

Cloth and Netting, Wire—

See Wire, etc.

Cocks, Brass—

Hardware list:
Compression, Plain Bibbs, Globe, Kerosene, Racking, etc., Cocks. 70¢10¢75¢

Coffee Mills—See Mills, Coffee.**Collars, Dog—**

Nickel Chain, Walter B. Stevens & Son, list 40¢
Leather, Walter B. Stevens & Son's list 40¢

Combs, Curry—

Metal Stamping Co. 30¢10¢

Mane and Tail—

Covert's Saddlery Works 60¢10¢

Compasses, Dividers, &c.—

Ordinary Goods 75¢60¢75¢10¢
Bemis & Call Hdq. & Tool Co.:
Dividers 65¢
Callipers, Double 65¢
Callipers, Inside or Outside 65¢
Callipers, Wing 60¢
Compasses 50¢

Conductor Pipe, Galva—

L. C. L. to Dealers
Territory Not needed.
A. Eastern 75¢75¢
B. Eastern 75¢75¢
Central 75¢75¢
Southern 70¢10¢
S. Western 70¢75¢
Terms, 60 days, 2% cash, 10 days. Factory shipments generally delivered.

Coolers, Water—

Gal. each 3 4 6 8
Labrador \$1.20 \$1.50 \$1.80 \$2.10 2.70
Gal. 3 4 6 8
Iceland, ea. \$1.80 \$2.10 2.40 3.00
Gal. 3 4 6 8
Galv. Lined Ea. \$1.55 \$2.00 \$2.30 \$2.90
Gay, Lined side handles
Gal. 3 4 6 8
Each \$1.35 \$2.15 \$2.40 \$3.50 \$4.15 5.25

Coopers' Tools—

See Tools, Coopers'.

Cord—

Sash—
Braided, Drab lb. 35¢
Braided, White, Com. lb. 25¢25¢
Cable Laid Italian lb. A, 15¢; B, 16¢
Common India lb. 10¢10¢45¢
Cotton Sash Cord, Twisted 20¢25¢
Patent Russia lb. 10¢15¢
Cable Laid Russia lb. 15¢
India Hemp, Braided lb. 10¢15¢
India Hemp, Twisted lb. 12¢13¢
Patent India, Twisted lb. 12¢13¢

Anniston Cordage Co.: Braided Cotton.
Old Glory, Nos. 7 to 12 \$2 25¢
Anniston, Nos. 7 to 12 \$2 25¢
Old Colony, Nos. 7 to 12 \$2 25¢
Anniston Drab, Nos. 7 to 12 \$2 25¢
Pearl Braided, cotton, No. 6 3/4 27¢
Eddystone Braided Cotton, No. 6 3/4 27¢
Edgemoor Cable Laid Italian, No. 7 to 10 \$2 33¢

Peelies—

Cable Laid Italian 16¢
Cable Laid Russian 14¢
Cable Laid India 12¢
Braided India 18¢
Samson, Nos. 7 to 12 \$3 36¢45¢
Braided, Drab Cotton \$3 36¢45¢
Braided, Italian Hemp \$3 36¢45¢
Braided, Linen \$3 36¢45¢
Braided, White Cotton or Spot \$3 36¢45¢
Massachusetts, White \$3 36¢45¢
Massachusetts, Drab \$3 36¢45¢
Phoenix, White, No. 7 to 12 \$4 24¢
No. 6 cords, 1¢ extra.
Silver Lake:
A quality, Drab 40¢
A quality, White 35¢
B quality, Drab 35¢
B quality, White 30¢
Italian Hemp 40¢
Linen 57¢46¢

Wire, Picture—

List Oct., '00, 85¢10¢10¢85¢10¢10¢55¢
Hendry Standard Wire Picture Cord 85¢10¢55¢

Cradles—

Grain 40¢12¢55¢

Crayons—

White Round Crayons, gross 5 1/2¢6¢
Cases, 100 gro., \$4.00, at factory.
D. M. Stewart Mfg. Co.
Jumbo Crayons gr. \$3.50
Metal Workers' Crayons gr. \$2.50
Soapstone Pencils, round, flat, or square gr. \$1.50
Rolling Mill Crayons gr. \$2.50
Railroad Crayons (composition) gr. \$3.00

Zelnicke's Lumber—

Red, Blue, Green gr. \$6.50
Black gr. \$7.00
See also Chalk.

Crooks, Shepherds'—

Fort Madison, Heavy \$7.00
Fort Madison, Light \$6.50

Crow Bars—See Bars, Crow.**Cultivators—**

Victor Garden 50¢

Cutlery, Table—

International Silver Company:
No. 12 Medium Knives, 1847 \$3.50
Star, Eagle, Rogers & Hamilton and Anchor \$3.50
Wm. Rogers & Son \$3.50

Cutters—Glass—

H. H. Mayhew Co. 40¢
Red Devil 50¢
Smith & Hemenway Co. 50¢
Woodward 40¢

Meat and Food—

American 80¢
Nos. 1 2 3 4 5 6
Each \$5 \$7 \$10 \$15 \$20 \$25
Enterprise 35¢25¢25¢
Nos. 1 2 3 4 5 6
Each \$3 \$3 \$2.75 \$4.50 \$6
Dixon's, 7 doz. 30¢10¢40¢
Nos. 1 2 3 4 5 6
Each \$14.00 \$17.00 \$19.00 \$20.00
Ideal \$4.00 \$5.00
Little Giant, doz \$3.30 \$4.00
Nos. 305 310 312 390 322
\$35.00 \$48.00 \$44.00 \$72.00 \$68.00
N. E. Food Choppers 40¢
New Triumph No. 605, 7 doz. \$24.00
Russwin Food No. 1, \$24.00, No. 2, \$27.00
Woodruff's, 7 doz 45¢10¢10¢
Nos. 100 150
Never-seek Slaw Shaver \$15.00 \$18.00 \$25¢30¢

Slaw and Kraut—

Henry Diston & Sons:
Slaw, Corn Grater, etc 40¢
Kraut Cutters 24 x 7, 28 x 8 \$30 x 9 55¢
Kraut Cutters 36 x 12, 40 x 12 40¢
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife \$24.00
Combined Slaw Cutter and Corn Grater \$40.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters 40¢
Slaw Cutters, 1 Knife, 7 gr. \$18¢30¢
Slaw Cutters, 2 Knife, 7 gr. \$22¢30¢

Tobacco—

All Iron, Cheap \$4.75¢5.50
Enterprise \$5.50¢6.00
National, 7 doz. \$1.81; No. 2, \$1.81, 40¢
Sargent's, 7 doz. No. 2 60¢
Sargent's No. 12 and 21 60¢10¢

Washer—

Appleton's, 7 doz. \$16.00 50¢10¢10¢

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger per doz. \$9.00
Iwan's Improved Post Hole Auger, 40¢55¢
Iwan's Vaughan Pattern Post Hole Auger, 7 doz. \$6.50
Iwan's Perfection Post Hole Digger \$4.50
Iwan's Split Handle Post Hole Diggers, 7 doz. \$7.50
Kohler's Universal, 1 doz. \$15.00
Kohler's Little Giant, 1 doz. \$12.00
Kohler's Hercules \$10.00
Kohler's Invincible \$9.00
Kohler's Rival \$8.00
Kohler's Pioneer \$7.20
Never-seek Post Hole Diggers, 7 doz. \$24.00
Samson, 7 doz. \$34.00 35¢

Dividers—See Compasses.**Doors, Screen—**

Phillips', style E, 3/4 in. \$10.50
Phillips', style U7, 7/8 in. \$8.00
Phillips', style x-y, 7/8 in. \$11.00

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, 7 doz. \$18.00, No. 2, \$15.00, No. 3, \$12.00, No. 4, \$10.00

Drawing Knives—

See Knives, Drawing.

Dressers, Emery Wheel—

Diamond Emery Wheel Dressers 35¢
Diamond Wheel Dresser Cutters 35¢

Drills and Drill Stocks—

Common Blacksmiths' Drill, each \$1.50@1.75
Borst, Millers Falls 15¢10¢
Borst, P. S. & W. 40¢55¢
Goodell Automatic Drills, 40¢55¢ 40¢10¢
Johnson's Automatic Drills Nos. 2 and 3 15¢55¢
Johnson's Drill Points 10¢
Millers Falls Automatic Drills 35¢10¢
Ratchet, Curtis & Curtis 25¢
Ratchet, Parker's 40¢
Ratchet, Weston's 35¢
Ratchet, Whitney's, P. S. & W. 50¢
Whitney's Hand Drill, No. 1, \$10.00;
Adjustable, No. 10, \$12.00 35¢45¢

Twist Drills—

Bit Stock 60¢10¢60¢10¢10¢
Taper and Straight Shank 60¢10¢60¢10¢55¢

Drivers, Screw—

Screw Driver Bits, per doz. 45¢60¢
Balsey's Screw Driver and Driver, 7 doz. 2 1/2 inch, \$5; 4 in., \$7.50 6 in., \$9. 40¢
Buck Bros' Screw Driver Bits 30¢
Champion 50¢
Edson 60¢
Fray's Hol. H'dle Sets, No. 3, \$12.00 50¢
Gay's Double Action Ratchet 25¢
Goodell's Autos \$50¢10¢10¢50¢10¢10¢55¢
Hurwood 40¢
Mayhew's Black Handle 40¢
Mayhew's Monarch 40¢10¢
Millers Falls, Nos. 20 and 21 25¢10¢
Millers Falls, Nos. 11, 12, 41, 42 15¢10¢
New England Specialty Co. 50¢
Sargent & Co.'s:
Nos. 1 and 60 50¢10¢10¢
Nos. 30 and 35 60¢10¢
Nos. 20 and 40 70¢10¢
Smith & Hemenway Co. 40¢45¢
H. D. Smith & Co.'s, Perfect Handle 40¢
Stanley & R. L. Co.'s:
No. 64, Varished Handle \$50¢60¢10¢10¢
No. 86 70¢70¢10¢10¢
Swan's:
Nos. 65 to 68 50¢
No. 40 10¢
Nos. 25, 35 and 45 30¢10¢10¢

Eave Trough, Galvanized

Territory, L. C. L.
A. Eastern 30¢10¢
B. Eastern 30¢10¢55¢
Central 30¢10¢
Southern 75¢16¢45¢
S. Western 75¢10¢55¢
Terms, 25 for cash. Factory shipments generally delivered.

See also Conductor Pipe and Elbows.**Elbows and Shoes—**

Factory shipments 60¢
Perfect Elbows (S. S. Co.) 40¢

Emery, Turkish—

4 to 6 5 to 15 10 to 20
Kegs lb. 5¢ 5¢6¢ 3¢4¢
Kegs lb. 5¢6¢ 6¢6¢ 3¢4¢
10-lb cans, 10 in case 6¢6¢ 7¢ 6¢
10-lb cans, less than 10.10¢ 10¢ 8¢
NOTE: In lots 1 or 3 tons a discount of 10%

Forks—

Base Discounts Aug. 1, 1899, list;

Hay, 2 tines.....	50¢10¢5%
Boys' & Fish, 2 tines.....	50¢10¢5%
Hay & Boys', 3 tines.....	60¢5%
Hay & Boys', 4 tines.....	60¢5%
Champion Hay.....	60¢5%
Hay & Header, long 3 tines.....	65%
Header, 4 tines.....	65%
Barley, 4 & 5 tines, Steel.....	60¢20%
Manure, 4 tines.....	60¢15¢2%
Manure, 5 and 6 tines.....	60¢25%
Spading.....	70¢25%
Potato Digger, 6 tines.....	60¢10%
Sugar Beet.....	60¢10%
Coke & Coal.....	40¢10%
Havy Mill & Steel.....	65%
Iowa Dig-Easy Potato.....	60¢10%
Victor, Hay.....	60¢15¢2%
Victor, Manure.....	60¢5%
Victor, Header.....	60%
Champion, Hay.....	60%
Champion Header.....	60%
Champion, Manure.....	60¢15¢2%
Columbia, Hay.....	60¢25%
Columbia, Manure.....	70%
Columbia, Spading.....	70¢12%
Hawkeye Wood Barley.....	40%
W. & C. Potato Digger.....	60¢20%
Acme Hay.....	60¢20%
Acme Manure, 4 tines.....	60¢10¢5%
Dakota Header.....	60¢20%
Jackson Steel Barley.....	60¢20%
Kansas Header.....	60%
W. & C. Favorite Wood Barley.....	40%

Frames—Saw—

White, Straight Bar per doz. 75¢@80¢
Red, Straight Bar per doz \$1.00@1.15
Red, Double Brace, per doz \$1.40@1.50

Freezers Ice Cream—

Qt. 1 2 3 4 6
Each.....\$1.85 \$1.60 \$1.30 \$2.20 \$2.30

Fruit and Jelly Presses—

See Presses, Fruit and Jelly.
Fry Pans—See Pans, Fry.
Fuse—Per 1000 Feet.....

Hemp.....

Cotton.....	3.80
Waterproof Single Taped.....	3.55
Waterproof Double Taped.....	4.40
Waterproof Triple Taped.....	5.15

Gates Molasses and Oil—

Stebbins' Pattern.....	80¢10¢10¢10¢5%
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Gauges—

Marking, Mortise, etc.....	50¢10¢5% 50¢10¢10¢5%
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Chapin-Stephens Co.

Marking, Mortise, etc.....	50¢10¢10¢10¢10%
Schoell's Patent.....	50¢10¢5% 50¢10¢10%
Door Hangers.....	50¢10¢5%
Stanley H. & L. Co.'s Built & Babber.....	50¢10¢10%
Gauge.....	50¢20¢10¢10%
Wire, Brown & Sharpe's.....	25%
Wire, Morse's.....	25%
Wire P. S. & W. Co.....	30¢10%

Climets—Single Cut—

	gro. \$1.75@2.00
Spike, Wood Handled, Assorted	
	gro. \$4.25@4.50

Glass, American Oil—**See Trade Report.****Glasses, Level—**

Chapin-Stephens Co.....	60¢10¢10¢10%
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Glue—Liquid Fish—

Bottles or Cans, with Brush.....	25¢50%
Cans (1/2 pts., pts., qts., 1/2 gal., gal.).....	25¢45%
International Glue Co. (Martin's).....	40¢10%

Grease Axle—

Common Grade.....	gro. \$4.50@5.50
Dixon's Everlasting.....	10¢10¢10¢10%
Dixon's Everlasting, in box.....	1.10; 2 lb \$2.00

Grips, Nipple—

Perfect Nipple Grips.....	40¢10¢2%
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Gridsles, Soapstone—

Pike Mfg. Co.....	30¢10¢35¢10%
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Grindstones—

Bicycle Emery Grinder.....	60¢80
Bicycle Grindstones, each.....	\$2.50@3.00
Pike Mfg. Co.....	30¢10%
Improved Family Grindstones.....	per inch, per doz.....\$2.00 30¢5%
Pike Mower Knife and Tool.....	Grinder, each.....\$9.00
Victor Ball Bearing, mounted, Angle.....	Iron Frames.....each, \$9.25

Halters and Ties—

Covert Mfg. Co.....	40¢25%
Web.....	40¢25%
Just Rope.....	40¢25%
Sisal Rope.....	30%
Cotton Rope.....	45¢25%
Hemp Rope.....	45¢25%

Cover's Saddlery Works—

Web and Leather Halters.....	70%
Jute and Manila Rope Halters.....	70%
Sisal Rope Halters.....	70%
Jute, Manila and Cotton Rope Ties.....	70%
Sisal Rope Ties.....	70%

Hammers—

Handled Hammers.....	40¢10¢10%
Heller's Machinists'.....	40¢10¢10¢10%
Heller's Farriers'.....	40¢10¢10¢10%
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....	\$1.75.....40¢10¢10%
Peck, Stow & Wilcox.....	40¢10¢2%
Fayette H. Plumb.....	40¢10¢2%
Plumb, A. E. Nail, 35¢47¢@38¢10¢10%	Engineers' and B. S. Hand.....50¢74¢50¢10¢74¢5%
Machinists' Hammers.....	30¢45¢50¢10¢5%
Riveting and Tinnings.....	40¢10¢10¢10%
Sargent's C. S. New List.....	40%

Heavy Hammers and Sledges—

Under 3 lb.....	10 50¢
3 to 5 lb.....	10 40¢
Over 5 lb.....	10 30¢

Wilkinson's Smiths'.....

24¢@10¢10

Handles—**Agricultural Tool Handles—**

Axe, Pick, etc.....	45¢50¢5%
Hoe, Rake, etc.....	45¢50¢5%
Fork, Shovel, Spade, etc.....	45¢50¢5%
Long Handles.....	45¢50¢5%
D Handles.....	40%

Cross-Cut Saw Handles—

Atkins'.....	40¢5%
Champion.....	45¢45¢10%
Disston's.....	50%

Mechanics' Tool Handle.75

Auger, assorted.....	gro. \$2.50@2.85
Brad Axl.....	gro. \$1.65@1.85

Chisel Handles—

Apple Tanged Firmer, gro. ass'd.....	\$2.40@2.65
Hickory Tanged Firmer, gro. ass'd.....	\$2.15@2.40
Apple Socket Firmer, gro. ass'd.....	\$1.75@1.95
Hickory Socket Firmer, gro. ass'd.....	\$1.45@1.60
Hickory Socket Framing, gro. ass'd.....	\$1.60@1.75
File, assorted.....	gro. \$1.30@1.50
Hammer, Hatchet, Axe, etc.....	50%
Hand Saw, Farnished, do. 80¢85¢	Not Farnished.....65¢75¢

Plane Handles—

Jack Box, 30¢; Jack Bolted.....	75¢
Fore, doz.....	45¢; Fore, Bolted 90¢

Chapin-Stephens Co.

Carving Tool.....	40¢40¢10%
Chisel.....	55¢60¢10%
File and W. L.....	55¢60¢10%
Saw and Plane.....	40¢40¢10%
Screw Driver.....	40¢40¢10%
Millers Falls Adj. and Hatchet Auger.....	15¢10%
Nicholson Simplicity File Handle.....	40¢35¢1.50

Hangers—

Jack, doz. 30c; Jack Bolted.....	75c
Fore, doz.	45c; Fore, Bolted 90c

Chapin Stephens Co.:

Allith Mfg. Co.

Reliable No. 1.....	per doz. \$12.00
Reliable No. 2.....	per doz. \$15.00

Chicago Spring Butt Co.

Friction.....	25%
Coil Spring.....	25%
Big Twin.....	25%
Chisholm & Moore Mfg. Co.....	50%
Baggage Car Door.....	30%
Elevator.....	30%
Railroad.....	30%
Cronk & Carrier Mfg. Co.....	80¢10¢5%
Roller Bearing.....	70¢5%

Griffin Mfg. Co.

Solid Axle, No. 10, \$12.00.....	75%
Roller Bearing, No. 11, \$15.00.....	75%
Roller Bearing, Ex. Hy., No. 22.....	45%
18 Hinged Hangers \$16.00.....	70%

Lane Bros. Co.

Parlor, Ball Bearing.....	\$4.00
Parlor, Standard.....	\$3.15
Parlor, No. 195.....	\$2.85
Parlor, New Model.....	\$2.90
Parlor, New Champion.....	\$2.25
Barn Door, Standard.....	60¢10¢2%
Hinged.....	80¢
Covered.....	60¢10%
Special.....	70¢35%

Lawrence Bros.

Advance.....	60¢10%
Cleveland.....	70¢25%
Clipper, No. 75.....	60%
Crown.....	60¢10%
Easy Parlor Door, Dbl. Sets, \$2.50; Single Sets, \$1.25.....	80¢25%
Hummer.....	70¢8%
New York.....	80¢10%
Peerless.....	70¢5%
Sterling.....	80¢10%

McKinney Mfg. Co.

No. 1, Special, \$15.....	60¢10%
Standard, \$18.....	60¢10%
Hinged Hangers, \$16.....	50%
Meyers' Stayon Hangers.....	60%

Richards Mfg. Co.

Pioneer Wood Track No. 3.....	\$2.15
Ball R'r's Steel Track No. 10.....	\$2.40
Roller B'r's Steel Track No. 12.....	\$2.80
Ball R'r's Steel Track No. 13.....	\$2.40
Roller B'r's Steel Track No. 14.....	\$2.30
Hero, Adjustable Track No. 19.....	50%
Adjustable Track Tandem Trol-ley Track No. 16.....	30%
Seal, Steel Track No. 5.....	\$2.40
Auto Adjustable Track No. 22.....	\$2.40 1%
Trolley B. D. No. 17.....	\$1.40
Trolley F. D. No. 130.....	\$2.35
Trolley F. D. No. 121.....	\$2.45
Trolley F. D. No. 130.....	\$2.60
Safety Underwriters F. D. No. 101.....	\$2.25
Tandem No. 44.....	\$3.00
Trolley F. D. No. 131.....	\$3.00
Palace, Adjustable Track No. 12.....	40¢10%
Royal, Adjustable Track No. 12.....	40¢10%
Ives' Wood Track No. 1.....	\$2.15
Trolley B. D. No. 29.....	\$1.35
Trolley B. D. No. 34.....	\$1.45
Trolley B. D. No. 37.....	\$1.50
Trolley B. D. No. 38.....	\$1.60
Roller Bearings Nos. 30, 40, 41, 42.....	44
Adaptation No. 42.....	70¢5%
Hinged Tandem No. 42.....	60¢10%
Folding Door B. B. Swivel No. 135.....	30%
Safety Door Hanger Co.....	60%
Storm King Safety.....	60%
U. S. Standard Hinge.....	60%
Stowell Mfg. and Foundry Co.....	40%
Acme Parlor Ball Bearing.....	40%
Ajax Hinge Door.....	60%

Apex Parlor Door.....

Atlas.....	50¢10¢5%
Baggage Car Door.....	80%
Chimney and Friction.....	50¢10%
Elevator.....	40%
Express.....	30%
Freight Car Door.....	60%
Intermediate.....	40¢10%
Lundy Parlor Door.....	50¢10%
Matchless.....	60¢10%
Nansen.....	60¢10%
Parlor Door.....	50¢10%
Railroad.....	50¢10%
Roller Bearing.....	60¢10%
Street Car Door.....	50%
Steel, Nos. 300, 400, 500.....	50¢10%
Underwriter's Fire Door.....	40%
West Warehouse Door.....	50%
Zenith for Wood Track.....	50¢10%

A. L. Swift Iron Works:

Eagle.....	60¢10%
Hylo.....	50¢10%
Perfection.....	60%
Pilot.....	40%

Taylor & Boggs Fy Co.'s Kidder's

Parlor Door.....	50&10%
Railroad.....	50&10%
Rex Hinge Door.....	60%
Street Car Door.....	50%

Wrought Iron Hinges—

Underwriters' Fire Door.....	40%
Wild West Warehouse Door.....	50%
Zenith for Wood Track.....	50&10%
A. L. Swett Iron Works:	

Gate—

Myers' Patent Gate Hangers, \$ doz.....	net 4.70
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Hinges—

McKinney's Perfect Hasp, \$ doz.....	50%
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Hatchets—

Regular list.....	25¢10¢35¢5%
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Heaters Carriage—

Clark No. 1, \$2.25; No. 2, \$2.50; No. 3, \$2.75; No. 4, \$3.00; No. 5, \$3.25; No. 6, \$3.50; No. 7, \$3.75; No. 8, \$4.00; No. 9, \$4.25; No. 10, \$4.50; No. 11, \$4.75; No. 12, \$5.00; No. 13, \$5.25; No. 14, \$5.50; No. 15, \$5.75; No. 16, \$6.00; No. 17, \$6.25; No. 18, \$6.50; No. 19, \$6.75; No. 20, \$7.00; No. 21, \$7.25; No. 22, \$7.50; No. 23, \$7.75; No. 24, \$8.00; No. 25, \$8.25; No. 26, \$8.50; No. 27, \$8.75; No. 28, \$9.00; No. 29, \$9.25; No. 30, \$9.50; No. 31, \$9.75; No. 32, \$10.00; No. 33, \$10.25; No. 34, \$10.50; No. 35, \$10.75; No. 36, \$11.00; No. 37, \$11.25; No. 38, \$11.50; No. 39, \$11.75; No. 40, \$12.00; No. 41, \$12.25; No. 42, \$12.50; No. 43, \$12.75; No. 44, \$13.00; No. 45, \$13.25; No. 46, \$13.50; No. 47, \$13.75; No. 48, \$14.00; No. 49, \$14.25; No. 50, \$14.50; No. 51, \$14.75; No. 52, \$15.00; No. 53, \$15.25; No. 54, \$15.50; No. 55, \$15.75; No. 56, \$16.00; No. 57, \$16.25; No. 58, \$16.50; No. 59, \$16.75; No. 60, \$17.00; No. 61, \$17.25; No. 62, \$17.50; No. 63, \$17.75; No. 64, \$18.00; No. 65, \$18.25; No. 66, \$18.50; No. 67, \$18.75; No. 68, \$19.00; No. 69, \$19.25; No. 70, \$19.50; No. 71, \$19.75; No. 72, \$20.00; No. 73, \$20.25; No. 74, \$20.50; No. 75, \$20.75; No. 76, \$21.00; No. 77, \$21.25; No. 78, \$21.50; No. 79, \$21.75; No. 80, \$22.00; No. 81, \$22.25; No. 82, \$22.50; No. 83, \$22.75; No. 84, \$23.00; No. 85, \$23.25; No. 86, \$23.50; No. 87, \$23.75; No. 88, \$24.00; No. 89, \$24.25; No. 90, \$24.50; No. 91, \$24.75; No. 92, \$25.00; No. 93, \$25.25; No. 94, \$25.50; No. 95, \$25.75; No. 96, \$26.00; No. 97, \$26.25

Wire Goods Co:
 Acme.....40&10%
 Chief.....70&10%
 Crown.....70&10%
 Clear.....70&10%
 V. Brace.....70&10%
 Cast Hardness.....50&10%

Wrought Iron—
 Box, 6 in., per doz. \$1.00; 8 in., \$1.25;
 10 in., \$2.50.
 Cottons.....doz. \$1.05@1.25
 Wrought Staples, Hooks, &c.,
 See Wrought Goods.

Miscellaneous—
 Hooks, Bench, see Stops Bench.
 Bush, Light, doz. \$5.50; Medium,
 \$6.00; Heavy, \$6.50
 Grass.....Nos. 1 3 4
 Best.....\$1.50 1.75 2.00
 Common.....\$1.30 1.50 1.80
 Potato and Manure.....60&15%
 Wh. Melres.....lb. 54@60
 Hooks ara Eyes:
 Brass.....60&10&10%
 Malleable Iron.....70&5@70&10%
 Covert Mfg. Co. Gate and Seattle Hooks
 Covert Saddlery Works' Self Looking
 Gate and Door Hook.....60%
 Ft. Madison Cut-Ruby Corn Hooks
 W. doz. \$5.25 net
 Bench Hooks—See Bench Stops.
 Corn Hooks—See Knives, Corn.

Horse Nails—See Nails, Horse
Horse Shoes—
 See Shoes, Horse.

Hose Rubber—
 Garden Hose, 3/4-inch:
 Competition.....ft. 4 1/2 @ 5 c
 3-ply Standard.....ft. 6 1/2 @ 7 c
 4-ply Standard.....ft. 7 1/2 @ 8 c
 5-ply extra.....ft. 8 1/2 @ 9 c
 6-ply extra.....ft. 10 @ 10 1/2 c
 Cotton Garden, 3/4-in., coupled:
 Low Grade.....ft. 6 @ 7 c
 Fair quality.....ft. 8 @ 9 c

Irons—Sad—
 From 4 to 10.....lb. 24@3 c
 B. B. Sad Irons.....lb. 3 1/4 @ 3 1/2 c
 Chinese Laundry.....lb. 1 1/4 @ 5 c
 Chinese Sad.....lb. 1 @ 4 1/2 c
 Mrs. Potts, cents per set:
 Nos.....50 55 60 65
 Jap'd Tops 63 59 73 69
 Tint'd Tops 65 63 75 73
 New England Pressing, lb. 3 1/2 @ 4 1/2

Pinking—
 Pinking Irons.....doz. 50@60c

Soldering—
 Soldering Coppers 3/4 and 5.....19@20c
 1 1/4 and 2.....21@22c

Jacks Wagon—
 Covert Mfg. Co.:
 Auto Screw.....30&5%
 Steel.....45&2%
 Covert's Saddlery Works':
 Daley.....60&10%
 Victor.....60&10%
 Lockport.....60%
 Lane's Steel.....30&10&5%
 R. Charles' Tiger Steel, No. 130.....10%

Kettles—
 Brass, Spun, Plain.....20@25%
 Enamelled and Cast Iron—See Ware.
 Hollow.

Knives—
Butcher, Kitchen, &c.—
 Foster Bros' Butcher, &c.....40&10%
 Smith & Hemenway Co.....40&10%
 Wilkinson Shear & Cutlery Co.....30%
 Hay and Straw—See Hay Knives.

Corn—
 Withington Acme, 2 doz. \$3.65; Dent,
 \$2.75; Adj. Serrated, \$2.20; Ser-
 rated, \$2.10; Yankee No. 1, \$1.50;
 Yankee No. 2, \$1.15.

Drawing—
 Standard List.....70&10@70&10&10%
 C. E. Jennings & Co. Nos. 45, 46.....60%
 Jennings & Griffin, Nos. 41, 42.....60%
 Ohio Tool Co. No. 1.....70%
 Swan's.....70&10&2%
 Watrous.....16%
 L. & J. White.....20&5@25%

Hay and Straw—
 Iwan's Sickle Edge.....doz. \$10.00
 Iwan's Serrated.....doz. \$10.00

Mining—
 Buffalo.....\$ gro. \$13.00

Miscellaneous—
 Farriers'.....doz. \$3.00@3.25
 Wostenbom's.....doz. \$3.00@3.25

Knobs—
 Base, 2 1/4-inch, Birch, or Maple,
 Rubber tip, gro.....\$1.10@1.15
 Carriage, Jap. all sizes, gro. 40@45c
 Door, Mineral.....doz. 65@70c
 Door, Por. Jap'd.....doz. 70@75c
 Door, Por. Nickel.....doz. 72@75c
 Bardley's Wood Door, Shutter, &c. 15%
 Picture, Sargent's.....60&10&10%

Lacing Leather—
 See Belting Leather.

Ladders, Store Etc.—
 Lane's 100%.....25%
 Myers Norton's Store Ladders.....30%
 R. Charles & Mfg. Co.:
 Iron o-e No. 112.....40%
 Climax 8' If. No. 113.....40%
 Trolley, No. 109.....40%

Ladies—Melting—
 L. & G. Mfg. Co., Low List.....25%
 P. S. & W.....50%
 Reading.....50%
 Sargent's.....50&10%

Lanterns—Tubular—
 Regular Tubular No. 0, doz. \$1.35@1.75
 Lift Tubular, No. 0, doz. \$1.75@5.25
 Hinge Tubular, No. 0, doz. \$1.75@5.25
 Other Styles.....10&10@10&10&5%

Bull's Eye Police—
 No. 1 3/4 inch.....\$2.50@2.75
 No. 2, 3 inch.....\$2.75@3.00

Lasts and Stands Shoe—
 Store's Atlas, Malleable Iron.....50%
 Stowe's Badger, Cast Iron.....50%

Latches—Thumb—
 Roggin's Latches, 1 1/2 x 2 1/2 in. doz. \$5.00

Door—
 Richards' Bull Dog, Heavy, No. 123.....40%

Richards' Trump, No. 127.....50%
Leaders Cattle—
 Small.....doz. 55c; large, 60c
 Covert Mfg. Co.....35%

Lifters, Transom—
 R. & E.....35&5%

Lines—
 Wire Clothes, Nos. 18 19 20
 100 feet.....\$2.20 2.00 1.65
 75 feet.....\$1.80 1.70 1.50
 Sanborn Corrugated Works:
 Solid Braided Chalk, No. 0 to 3.....40%
 Silver Lake Braided Chalk, No. 0, 60.00;
 No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50
 W. gr.....20%
 Masons' Lines, Shade Cord, &c.: White
 Cotton, No. 3 1/2, \$1.50; No. 4, \$2.00; No. 4
 1/2, \$2.50; Colors, No. 5 1/2, \$2.50; No. 4
 1/2, \$2.50; No. 4 1/2, \$2.75; Lines, No. 2 1/2
 \$2.50; No. 4, \$2.50; No. 4 1/2, \$4.50.....20%
 Tent and Awning Lines: No. 5, White
 Cotton, \$7.50; Drab Cotton, \$5.50.....20%
 Clothes Lines, White Cotton, 30 ft., \$2.75;
 40 ft., \$3.25; 50 ft., \$3.75; 60 ft., \$4.25;
 80 ft., \$4.75; 100 ft., \$5.25.....20%
 Anstetter Waterproof Clothes, 50 ft.,
 W. gr. \$3.40; 60 ft. Edge, \$2.00; Air Line
 \$2.00; Acme, \$17.00; Alabama, \$15.00;
 Empire, \$14.00; Advance, \$13.50; Ori-
 ole, \$20.00; Albermarle, \$18.50; Eclipse,
 \$12.50; Chicago, \$11.00; Standard,
 \$10.00; Columbia, \$9.50; Allston, \$12.50;
 Calhoun, \$11.00.

Locks—Cabinet—
 Cabinet Locks.....35%@35%&7%
Door Locks, Latches, &c.—
 [Net prices are very often made on
 these goods.]
 Reading Hardware Co.....45&20%
 R. & E. Mfg. Co.....40%
 Sargent & Co.....40&10%
 Stowell's Steel Door Latches.....50%

Elevator—
 Stowell's.....50%

Padlocks—
 Wrought Iron.....75&10&5@80&5%
 R. & E. Mfg. Co. Wrt. Steel and Brass.....75&10&5%

Sash, &c.—
 Ives' Patent:
 Bronze and Brass.....42%
 Crescent.....50&10%
 Iron.....62%
 Window Ventilating.....60%
 Robison Patent Ventilating Sash
 Lock.....40%
 Wrought Bronze and Brass.....55%
 Wrought Steel.....55%
 Pullman Patent Ventilating Lock.....25%
 Reading.....60%

Machines—Boring—
 Com. Upright, Without Augers, \$2.00
 Com. Angular, Without Augers, \$2.25
 Without Augers:
 R. & E. Mfg. Co.: Upright, Angular,
 Improved No. 3, \$1.25 No. 1, \$1.50
 Improved No. 4, 3.75 No. 3, 3.38
 Improved No. 5, 2.75.....35&5%
 Jennings' Nos. 1 and 4.....5%
 Miller's Falls.....5%
 Snell's, Rice's Pat. 2.50 2.75

Corking—
 Reliance Invaluable Hand Power.....doz. \$48.00

Fence—
 Williams' Fence Machines, each, \$5.50

Holating—
 Moore's Anti-Friction Differential Pul-
 ley Block.....30%
 Moore's Hand Hoist, with Lock Brake, 30%
Ice Cutting—
 Chandler's.....12&5%

Washing—
 Boss Washing Machine Co.: Per doz.
 Boss No. 1; Boss Rotary.....\$57.00
 Boss No. 2; Boss Rotary.....\$60.00
 Champion Rotary, Banner No. 1, \$54.00
 Standard Champion No. 1.....\$48.00
 Standard Perfection.....\$60.00
 Clint Square Western.....\$30.00
 Uneda American, No. nd.....\$29.00

Mallets—
 Hickory.....45&5@50%
 Lignumvite.....45&5@50%
 Timmers', Hickory and Applewood,
 doz.....50@55c

Mashers, Vegetable—
 Western, W. G. Co., Potato.....60&10%

Mats—Door—
 Elastic Steel (W. G. Co.).....10%

Mattocks—
 See Picks and Mattocks.

Milk Cans—See Cans, Milk
Mills—Coffee, etc.—
 Katerprise Mfg. Co.....35&30%
 National Mfg. Co. No. 1.....30%
 Parker's Columbia & Victoria, 50&10&5%
 Parker's Box and Slide.....50&10&5%
 Swift, Lane Bros Co.....30%

Mowers, Lawn—
 Net prices are generally quoted.
 Cheap.....all sizes, \$1.75@2.00
 Good.....all sizes, \$2.25@2.50
 10 12 14 16-inch
 High Grade 4.25 4.50 4.75 5.00
 Continental.....60&5%
 Great American.....70%
 Quaker City.....70%
 Pennsylvania, Jr., Ball Bearing.....70%
 Pennsylvania, Jr., Ball Bearing.....60%
 Pennsylvania Golf.....50%
 Pennsylvania Horse.....35&5%
 Pennsylvania Pony.....40&5%
 Philadelphia:
 Styles M. S., C. K. T.....70&5%
 Style A, all Steel.....60&5%
 Style E, High Wheel.....70&10&5%
 Drexel and Gold Coin, low list.....40&5%

Nails—
 Cut and Wire. See Trade Report.
 Wire Nail: and Brads, Paped.
 List July 30, 1899.....85&10&10@90%
 Hungarian, Finishing, Upholster-
 ers', &c. See Tacks.

Horse—
 Nos. 4 7 8 9 10
 Anchor 23 21 20 19 18.....40&5%
 Champ'l'n. 21 26 25 24 23.....50%
 Coleman.....13 12 12 11 11.....net

Nos. 6 7 8 9 10
 New Haven 23 21 20 19 18.....40&5%
 Putnam.....23 21 20 19 18.....35&5%
 New P't'm 19 18 17 16 15.....10&10%
 Western, per lb.....8%
 Jobbers' special brands, per lb. 8@8 1/2 c

Picture—
 1 1/2 2 3 4 5 3 1/2 in.
 Brass Head.....45 60 70 95 1.00 gro.
 Por. Head.....1 10 1 10 1 10.....gro.

Nippers, See Pliers and Nippers.
Nuts—
 Cold Punched: Off list.
 Mfrs. or U. S. Standard.
 Square, plain.....\$5.10
 Hexagon, plain.....\$5.60
 Square, C. T. & R.....\$5.30
 Hexagon, C. T. & R.....\$6.00
 Hot Pressed:
 Mfrs., U. S. or Nar. Gauge Stan'd.
 Square Blank.....\$5.80
 Hexagon Blank.....\$6.30
 Square Tapped.....\$5.80
 Hexagon Tapped.....\$6.30

Oakum—
 Best or Government.....lb. 6 1/2 c
 Navy.....lb. 6 c
 U. S. Navy.....lb. 6 c
 Plumbers' Spun Oakum.....2 1/2 c
 In carload lots 1/4 lb. off f.o.b. New
 York.

Oil Tanks—See Tanks, Oil.
Oilers—
 Brass and Copper.....60&10%
 Tin or Steel.....65&10%
 Zinc.....65&10%
 Chas. or Paragon:
 Brass and Copper.....45&10@50%
 Tin or Steel.....65&10%
 Zinc.....65&10%
 Malleable, Hammers' Improved, No. 1,
 \$3.00; No. 2, \$4; No. 3, \$4.40 W. doz. 30%
 Malleable, Hammers' Old Pattern,
 same list.....50&10%
 American Tube & Stamping Co.:
 Spring Bottom Cans.....70&70&10%
 Railroad Oilers etc.....60&60&10%

Openers—Can—
 French.....doz. 55c
 Iron Handle.....doz. 25@37c
 Sargine, Iron Hdl., per doz. 35@40c
 Sardine Scissors.....doz. \$1.75@3.00
 National.....doz. 50%
 Stowell's Sprague.....per doz. 35@45%

Egg—
 Nickel Plate.....per doz. \$2.00
 Silver Plate.....per doz. \$4.00

Packing—
 Asbestos Packing, Wick and Rope,
 1 1/2 @ 1 1/2 c lb.

Rubber—
 Sheet, C. I. S.....8@10c
 Sheet, C. O. S.....9@15c
 Sheet, C. B. S.....10@11c
 Sheet, Pure Gum.....50@65c
 Sheet, Red.....40@50c
 Jenkins' 7/8, 1 1/2, 2.....50&5%

Miscellaneous—
 American Packing.....70&10c lb.
 Cotton Packing.....16@35c lb.
 Italian Packing.....9@15c lb.
 Jute.....4@11c lb.
 Russia Packing.....8@11c lb.

Pails—Creamery
 S. S. Co., with gauges, No. 1 \$1.25;
 No. 2, \$1.50 W. doz.

Galvanized—
 Price per doz.
 Quart.....10 15 14
 Water, Regular.....1.50 1.75 2.00
 Water, Heavy.....2.75 3.00 3.25
 Fire, Rd. Bottom.....2.50 2.60 2.80
 Well.....2.25 2.50 2.75

Pans—Dripping—
 Standard List.....60&10@60&10&5%

Fry—
 Common Lipped:
 No. 1 2 3 4 5
 Per doz. \$0.85 1.00 1.10 1.30 1.50
Roasting and Baking—
 Regal, S. S. & Co. W. doz. Nos. 5, \$4.50;
 10 \$5.50; 20 \$6.75; 30 \$8.25
 Savory, W. doz., net, Nos. 200, \$2.00; 400,
 \$15.00
 Simplex, W. gro.:
 No. 40 50 60 140 150 160
 \$30.00 \$31.00 \$42.00 \$110 79.50 \$40.00

Paper—Building Paper—
 Asbestos:
 Building Felt.....lb.
 Mill Board, sheet, 40 x 40 inches 3 1/2 c
 Mill Board, roll, thicker than 1-16
 inch.....3 1/2 c
 Mill Board, roll, 1-16 in. thick and
 less.....2 1/2 c

Rosin Sized Sheathing—
 500 sq. ft.
 Light wt., 25 lb. to roll, \$0.40@0.45
 Medium wt., 30 lb. to roll, \$0.45@0.50
 Heavy wt., 40 lb. to roll, \$0.65@0.70
 Black Water Proof Sheathing, 500
 Sq. ft., 1 ply, 60c; 2 ply, 85c; 3
 ply, \$1.10; 4 ply, \$1.25
 Deafening Felt, 6, 6 and 4 1/2 sq. ft.
 to lb., ton.....\$1.00
 Red Rope Roofing, 250 sq. feet per
 roll.....\$1.75
 NOTE—These goods are often sold at
 delivered prices.

Tarred Paper.
 1 ply (roll 500 sq. ft.), ton, \$2.50@3.50
 2 ply, roll 105 sq. ft.....55@60c
 3 ply, roll 175 sq. ft.....75@80c
 Slater's Felt (roll 500 sq. ft.).....75c
 NOTE—Above prices often include de-
 livery, and are for Eastern territory,
 where prices are controlled by agreement
 between the manufacturers. In open

territory much lower prices are current.
 R. R. M. Stone Surfacted Hoisting (roll
 110 sq. ft.).....\$2.75

Sand and Emery—
 Flint Paper and Cloth.....50&10@60%
 Garnet Paper and Cloth.....25%
 Emery Paper and Cloth.....50&10@60%

Parers—Cloth—
 Advance.....doz. \$4.00
 Baldwin.....doz. \$4.00
 Bonanza Improved.....each \$0.50
 Daley.....doz. \$4.00
 Dandy.....each \$7.50
 Kureka Improved.....each \$20.00
 Family Bay State.....doz. \$15.00
 Improved Bay State.....doz. \$36.00
 Little Star.....doz. \$5.00
 New Lightning.....doz. \$7.00
 Reading 78.....doz. \$3.25
 Rocking Table.....doz. \$6.00
 Turn Table '98.....doz. \$6.00
 White Mountain.....doz. \$5.00

Potato—
 Saratoga.....doz. \$7.00
 White Mountain.....doz. \$7.00

Picks and Mattocks—
 List Feb. 23, 1899.....70&5@70&10%

Pinking Irons—
 See Irons, Pinking.

Pins—Escutcheon—
 Brass.....60@60&10%
 Iron, list Nov. 11, '85.....60@60&10%

Pipe, Cast Iron Soil—
 Standard, 2-6 in.....50&10%
 Extra Heavy, 2-6 in.....65%
 Fittings.....70

Pipe, Merchant,
 Steel Carload Lots,
 f.o.b. Pittsburgh. Galva-
 nized.
 1 1/2, 1 3/4, 3/4 inch.....68%
 1 1/2 inch.....71%
 2 to 6 inch.....75%
 7 to 12 inch.....71%

Pipe, Sewer—
 Jobbers' Prices—
 Standard Pipe and Fittings, 3 to 2 1/2 in.
 New England.....67%
 New York and New Jersey.....70%
 Maryland, Delaware, East Penn.....75%
 West Penn and West Va.....75%
 Virginia.....75%
 Ohio, Michigan and Ky.....75%
 Indiana.....75%
 Carload lots are generally delivered.

Pipe, Stove—
 Edwards' Nested Stove Pipe:
 C. L. L. C. L.
 5 in., per 100 joints.....7.00 8.50
 6 in., per 100 joints.....7.50 8.50
 7 in., per 100 joints.....8.50 9.50

Planes and Plane Irons—
Wood Planes—
 Bench, First quality.....40&5@40&10%
 Bench, Second qual.....50&5@50&10%
 Molding.....35&5@35&10%
 Bailey's (Stanley R. & L. Co.)
 5&10@25&10&10%

Chapin-Stephens Co.:
 Bench, First Quality.....40&10&10%
 Bench, Second Quality.....50&50&10%
 Molding.....35&5@35&10%
 Toy and German.....40&40&10%
 Ohio Tool Co.:
 Bench, First Quality.....40&40&10%
 Bench, Second Quality.....50&50&10%
 Molding.....35&5@35&10%
 Adjustable Wood Bottom.....60%
 Union.....60%

Iron Planes—
 Bailey's (Stanley R. & L. Co.)
 25&10@25&10&10%
 Chaplin's Iron Planes.....50&10%
 Miscellaneous Planes (Stanley R. & L.
 Co.).....30&10@30&10&10%
 Ohio Tool Co.'s Iron Planes.....40%
 Sargent's.....30&10%
 Union.....60%

Plane Irons—
 Wood Bench Plane Irons.....30&5@30&10%
 Buck Bros.....30&5@30&10%
 Chapin-Stephens Co.....30&50&10%
 Ohio Tool Co.....30%
 Stanley R. & L. Co.....20&10@20&10&10%
 Union.....30%
 L. & J. White.....20&5@25%

Planters, Corn, Hand.
 Kohler's Eclipse.....doz. \$8.50

Plates—
 Felco.....lb. 3 1/4 @ 1c
 Self-Sealing Pie Plates (S. S. & Co.)
 doz. \$3.00.....50%

Pliers and Nippers—
 Button Pliers.....75&10&10%
 Gas Burner, per doz., 5 in., \$1.75@
 \$1.90; 6 in., \$1.45@1.60
 Gas Pipe, 7 8 10 12 in.
 \$3.00 \$2.25 \$3.00 \$3.75
 Acme Nippers.....50&50&5%
 Cronk & Carrier Mfg. Co.:
 American Button.....75&10%
 Cronk's.....60%
 Improved Button.....60&10%
 Smit's Pattern.....30%
 Combination and others.....35&5%
 Heller's Farriers' Nippers, Pincers,
 and Tools 40&10@40&10&10%
 P. A. & W. Timmers' Cutting Nippers.....30&30&10%
 Swedish Side, End and Diagonal Cut-
 ting Pliers.....50%
 Utica Drop Forge & Tool Co.:
 Pliers and Nippers, all kinds.....40%

Plumbs and Levels—
 Chapin-Stephens Co.:
 Plumbs and Levels.....30&20&10&10%
 Chapin's Imp. Brass Cor. 40&40&10%
 Pocket Levels.....30&30&10&10%
 Level Glasses.....60&60&10%
 Diston's Plumbs and Levels.....70%
 Diston's Pocket Levels.....70%
 C. E. Jennings & Co.'s Iron.....35%
 C. E. Jennings & Co.'s Iron, adjustable,
 40&7%
 Stanley R. & L. Co.....20&10@20&10&10%

Paxon Nut Co., 60¢ @ 60 & 104
 Boxwood, 35¢ @ 10 & 35 & 10 & 10¢
 Ivory, 35¢ @ 10 & 35 & 10 & 10¢
Sash Balances—See *Balance Sash*.
Sash Locks—See *Locks, Sash*.
Sash Weights—
 See *Weights, Sash*.
Sausage Stuffers or Fillers—
 —see *Stuffers or Fillers, Sausage*.
Saw Frames—See *Frames, Saw*.
Saw Sets—See *Sets, Saw*.
Saw Tools—See *Tools, Saw*.
Saws—
 Atkins :
 Circular, 50¢
 Cross Cuts, 50¢ & 10¢ @ 60
 Gang, Mill and Drag 35¢ @ 5
 One-Man Saw Drag 50¢
 Wood Saws, 40¢
 Hand, Compass, &c., 40¢
 Chapin-Stephens Co. :
 Turning Saws and Frames, 30¢ @ 30 & 10¢
 Diamond Saw & Stamping Works :
 Sterling Kitchen Saws, 30¢ @ 10 & 5¢
 Diston's :
 Circular, Solid and Inserted Tooth, 50¢
 Band, 3 to 14 in. wide, 30¢
 Hand, 14 to 24" 70¢
 Crosscuts, 45¢
 Narrow Crosscuts, 30¢
 Mulay, Mill and Drag 50¢
 Framed Wood Saw, 35¢
 Wood Saw Blades, 37¢
 Wood Saw Rods, 25¢
 Hand Saws, Nos. 18, 99, 9, 16, d100, 25¢
 Ds, 120, 77, 77, 8 25¢
 Hand Saws, Nos. 7, 107, 107½, 3, 1, 30¢
 0, 00, Combination 30¢
 Keyhole, &c 25¢
 Butcher Saws and Blades 35¢
 C. E. Jennings & Co.'s :
 Back Saws, 35¢
 Butcher Saws, 30¢
 Compass and Keyhole Saws, 35¢ & 5¢
 Framed Wood Saws, 35¢
 Hand Saws, 20¢ & 2½¢
 Wood Saw Blades, 35¢
 Millers Fall's :
 Butcher Saws, 15¢ & 10¢
 Star Saw Blades, 15¢ & 10¢
 Peace & Richardson's Hand Saws, 30¢
 Stmonds' :
 Circular Saws, 50¢
 Crescent Ground Cross Cut Saws, 35¢
 One-Man Cross Cuts, 40¢ & 10¢
 Gang Mill, Mulay and Drag Saws, 50¢
 3 and 4 Man Saws, 25¢ & 2¢ 7½¢
 Back Saws, 25¢ & 2¢ 7½¢
 Butcher Saws, 35¢ & 3¢ 7½¢
 Hand Saws, 25¢ & 2¢ 7½¢
 Hand Saws, Bay State Brand, 45¢
 Compass, Keyhole, &c 25¢ & 2¢ 7½¢
 Diamond Hack, Screw Co., 35¢ & 3¢ 7½¢
 Diamond Kitchen Saws, 40¢ & 10¢ @ 50¢
 Butcher Saws Blades, 35¢ @ 40¢
 Wheeler, Madden & Clemons Mfg. Co.'s
 Cross Cut Saws, 30¢
Hack Saws—
 Atkins' Hack Saw Blades A A A. 25¢
 Diston :
 Concave Blades, 25¢
 Keystone, 40¢
 Hack Saw Frames, 30¢
 Fitchburg File Works, The Best 25¢
 C. E. Jennings & Co.'s :
 Hack Saw Frames, Nos. 175, 180, 40¢ & 7½¢
 Hack Saws, Nos. 175, 180, complete, 40¢ & 7½¢
 Goodell's Hack Saw Blades 40¢
 Griffin's Hack Saw Frames 35¢ & 5¢ & 10¢
 Griffin's Hack Saw Blades, 35¢ & 5¢ & 10¢
 Springfield Mach. Screw Co. :
 Diamond Hack Saw Blades 35¢
 Diamond Hack Saw Frames 50¢
 Star Hack Saws and Blades, 15¢ & 10¢
 Sterling Hack Saw Blades, 75¢
 Sterling Hack Saws, 30¢ & 45¢
Scroll—
 Barnes' No. 7, 115, 25¢
 Barnes' Scroll Saw Blades 40¢
 Barnes' Velociped Power Scroll Saw, without boring attachment, \$18 :
 with bor' n attachment, \$20 20¢
 Lester, complete, \$10.00 15¢ & 10¢
 Rogers, complete, \$4.00 15¢ & 10¢
Scalars, Fish—
 Covert's Saddlery Works 60¢ & 10¢
Scales—
 Family, Turnbull's, 60¢ @ 50¢ & 10¢
 Counter :
 Hatch, Platform, 4x10 lbs doz \$5.50
 Two Platform, 4x10 to 1 lb doz, \$18
 Union Platform, Plain, 1" 1.70¢ @ 1.10
 Union Platform, Striped \$1.85 @ 2.15
 Chatillon's :
 Eureka, 25¢
 Favorite 40¢
 Grocers' Trip Scales, 30¢
 Chicago Scale Co. :
 The "Little Detective," 25 lbs 50¢
 Union or Family Co. 2 80¢
 Portable Platform (reduced list), 35¢ & 5¢
 Wagon or Stock (reduced list), 25¢ @ 30¢
 "The Standard" Portables 30¢
 "The Standard" R. R. and Wagon 30¢
Scrapers—
 Box, 1 Handle, doz. \$1.00 @ 1.25
 Box, 2 Handle, doz. \$2.00 @ 2.25
 Ship Light, \$3.00; Heavy, \$1.50
 Adjustable Box Scraper (S. R. & L. Co.) \$6.00
 35¢ @ 50¢ & 10¢
 Chapin-Stephens Co., Box, 30¢ @ 50¢ & 10¢
Screens, Window, and Frames—
 Flyer Pattern Screens, 60¢ & 30¢ & 5¢ & 2½¢
 Maine Screen Frames, 40¢ @ 10¢ & 5¢
 Perfection Screens, 60¢ & 30¢ & 5¢ & 2½¢
 Phillips' Screen Frames, 60¢ & 30¢ & 5¢ & 2½¢
 See also *Doors*.

Screws—Bench and Hand—
Bench, Iron, doz. 1 in. \$2.50 to \$2.75;
1 1/4, \$3.00 to \$3.25; 1 3/4, \$3.50 to \$3.75
Bench, Wood, Beech, doz. 30 @ \$0.30 to \$0.35
Hand, Wood, doz. 30 @ \$0.30 to \$0.35
R. Bliss Mfg. Co., Hand, doz. 30 @ \$0.30 to \$0.35
Chapin-Stephens Co., Bench and Hand, doz. 30 @ \$0.30 to \$0.35
Ohio Tool Co., Bench and Hand, doz. 30 @ \$0.30 to \$0.35
Coach, Lag and Hand Rail—
Lag, Common Point, list Oct. 1, 99, doz. 80 @ \$0.25
Coach and Lag, Gimlet Point, list Oct. 1, '99, doz. 80 @ \$0.25
Hand Rail, list Jan. 1, '81, 70 @ \$0.10 to \$0.15

Jack Screws—
Standard list, doz. 75 @ \$0.10 to \$0.15
Mullers Falls, doz. 50 @ \$0.10 to \$0.15
P. S. & W., doz. 50 @ \$0.10 to \$0.15
Sargent, doz. 70 @ \$0.10 to \$0.15

Machine—
List Jan. 1, '98,
Flat or Round Head, Iron, 50 @ \$0.50 to \$0.75
Flat or Round Head, Brass, 50 @ \$0.50 to \$0.75
Set and Cap—
Set (Iron or Steel), doz. 75 @ \$0.75
Sq. Hd. Cap, doz. 70 @ \$0.75
Hex. Hd. Cap, doz. 70 @ \$0.75
Rd. or Filister Hd. Cap, 65 @ \$0.75 given.

Wood—
List July 23, 1903,
Manufacturers' printed discounts:
Flat Head, Iron, doz. 87 1/2 @ \$0.10 to \$0.15
Round Head, Iron, doz. 85 @ \$0.10 to \$0.15
Flat Head, Brass, doz. 85 @ \$0.10 to \$0.15
Round Head, Brass, doz. 80 @ \$0.10 to \$0.15
Flat Head, Bronze, doz. 77 1/2 @ \$0.10 to \$0.15
Round Head, Bronze, doz. 75 @ \$0.10 to \$0.15
Drive Screws, doz. 87 1/2 @ \$0.10 to \$0.15

Scroll Saws—See Saws, Scroll.
Scythes— Per doz.
Clipper Pattern, Grass, \$4.25 to \$5.00
Full Polished Clipper, doz. \$4.75 to \$5.50
Grain, doz. \$7.00 to \$7.50
Clipper, Grain, doz. \$7.75 to \$8.25
Weed and Bush, doz. \$4.50 to \$5.00

Seeders— Ralsin— doz. 85 @ \$0.30
Sets— Axl and Tool—
Brad Axl and Tool Sets:
Wood Hdl., 10 Axls, doz. \$3.00 to \$3.25
Wood Hdl., 14 Axls, 6 Tools, doz. \$3.50 to \$3.60
Atken's Sets, Axl and Tools, doz. \$10.00 to \$10.10
Fray's Adj. Tool Hdl., Nos. 1, 12; 2, 18; 3, 19; 4, 20; 5, 21, doz. \$5.00 to \$5.10
C. E. Jennings & Co.'s Model Tool Holders, doz. \$3.00 to \$3.10
Mullers Falls Adj. Tool Hdl., No. 1, \$12; No. 2, \$13; No. 3, \$14, doz. \$15.00 to \$15.10
Stanley's Excelsior, No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50, doz. \$30.00 to \$30.10

Garden Tool Sets—
Ft. Madison Three Piece S. Hoe, Rake and Shovel, doz. sets, \$30.00
Nail—
Square, doz. per gro. \$2.25 to \$2.50
Round, Bk. and Pol., assorted, doz. \$1.80 to \$2.00
Octagon, doz. \$1.50 to \$1.75
Buck Brothers, doz. \$7.75 to \$8.00
Cannon's Diamond Point, per gr. \$1.15 to \$1.25
Mayhew's, doz. \$7.00 to \$7.20
Snell's Cannon's Diamond Pt. per gr. \$1.20 to \$1.30
Snell's Corrugated, Cup Pt. per gro. \$7.20 to \$7.30
Snell's Knurled, Cup Pt., per gro. \$7.20 to \$7.30
Springfield Mach. Screw Co., Diamond Knurled, Cup Pt., per gro. \$7.20 to \$7.30

Rivet—
Regular list, doz. 75 @ \$0.75 to \$0.10
Saw—
Alken's, doz. 50 @ \$0.10 to \$0.15
Genuine, doz. 50 @ \$0.10 to \$0.15
Imitation, doz. 50 @ \$0.10 to \$0.15
Atkin's, doz. 40 @ \$0.10 to \$0.15
Criterion, doz. 40 @ \$0.10 to \$0.15
Adjustable, doz. 40 @ \$0.10 to \$0.15
Bemis & Call Co.'s, doz. 30 @ \$0.10 to \$0.15
Cross Cut, doz. 30 @ \$0.10 to \$0.15
Hammer, new Pat., doz. 20 @ \$0.10 to \$0.15
Plate, doz. 20 @ \$0.10 to \$0.15
Spring Hammer, doz. 30 @ \$0.10 to \$0.15
Dison's Star and Monarch, doz. 30 @ \$0.10 to \$0.15
Morrell's No. 1, \$15.00, doz. 50 @ \$0.10 to \$0.15
Nos. 3 and 4, Cross Cut, \$20.00, doz. 50 @ \$0.10 to \$0.15
No. 5, Mill, \$30.00, doz. 50 @ \$0.10 to \$0.15
No. 10, 11, 95, \$15.00, doz. 50 @ \$0.10 to \$0.15
No. 1 Old Style, \$10.00, doz. 50 @ \$0.10 to \$0.15
Special, \$16.25, doz. 50 @ \$0.10 to \$0.15
Glant Royal, Cross Cut, doz. \$8.50 to \$9.00
Royal, Hand, doz. \$5.00 to \$5.50
Taintor Positive, doz. \$0.75 to \$0.80

Shaving—
Fox Shaving Sets, No. 30, per doz. \$24.00 net
Sharpeners, Knife—
Chicago Wheel & Mfg. Co., doz. 85 @ \$0.30 to \$0.35
Shaves Spoke—
Iron, doz. \$1.00 to \$1.15
Wood, doz. \$1.75 to \$2.00
Bailey's (Stanley & L. Co.), doz. 30 @ \$0.10 to \$0.15
Chapin-Stephens Co., doz. 30 @ \$0.10 to \$0.15
Goodell's, doz. \$0.00 to \$0.15
Wood's F1 and F2, doz. 15 @ \$0.10 to \$0.15

Shears—
Cast Iron, 7 8 9 in.
Best, \$16.00 15.00 20.00 gro.
Good, \$13.00 15.00 17.00 gro.
Cheap, \$5.00 6.00 7.00 gro.
Straight Trimmers, etc., doz. 70 @ \$0.70 to \$0.10
Best quality, Jap., doz. 70 @ \$0.70 to \$0.10
Fair qual. Jap., doz. 60 @ \$0.60 to \$0.10
Nickel, doz. 75 @ \$0.75 to \$0.10
Tailors' Shears, doz. 40 @ \$0.40 to \$0.10
Aome Cast Shears, doz. 40 @ \$0.40 to \$0.10
H. Inisch's Tailors' Shears, doz. 40 @ \$0.40 to \$0.10
Wilkinson's Hedge, doz. 100 list 45
Wilkinson's Branch, Lawn and Borders, doz. 100 list 50
Wilkinson's Sheep, doz. 100 list 50

Tinners' Snips—
Steel Blades, doz. \$0.25 to \$0.30
Steel Laid Blades, doz. \$0.40 to \$0.50
Forged Handles, Steel Blades, Berlin, doz. \$0.40 to \$0.50

Heintzsch's Snips, doz. 40 @ \$0.40 to \$0.50
Jennings & Griffin Mfg. Co.'s, 6 1/4 to 10 in., doz. 30 @ \$0.30 to \$0.40
Niagara Snips, doz. 40 @ \$0.40 to \$0.50
P. S. & W. Co., doz. 30 @ \$0.30 to \$0.40

Pruning Shears and Tools—
Cronk's Grape Shears, doz. 33 1/2 @ \$0.30 to \$0.40
Cronk's Pruning Shears, doz. 33 1/2 @ \$0.30 to \$0.40
Dison's Combined Pruning Hook and Saw, doz. \$18.00 to \$20.00
Dison's Pruning Hook, doz. \$12.00 to \$15.00

John T. Henry Mfg. Co.:
Pruning Shears, all grades, doz. 40 @ \$0.40 to \$0.50
Orange Shears, doz. 50 @ \$0.50 to \$0.60
Grape, doz. 40 @ \$0.40 to \$0.50
Tree Pruners, doz. 75 @ \$0.75 to \$0.80
P. S. & W. Co., doz. 33 1/2 @ \$0.30 to \$0.40

Sheaves—Sliding Door—
Stowell's Anti-Friction, doz. 50 @ \$0.50 to \$0.60
Patent Roller Hatfield's, Sargent's list, doz. 70 @ \$0.70 to \$0.80
Reading, doz. 45 @ \$0.45 to \$0.50
R. & E. list, doz. 33 1/2 @ \$0.33 1/2 to \$0.40
Wrightsville Hatfield Pattern, doz. 50 @ \$0.50 to \$0.60

Sliding Shutter—
Reading list, doz. 45 @ \$0.45 to \$0.50
R. & E. list, doz. 33 1/2 @ \$0.33 1/2 to \$0.40
Sargent's list, doz. 50 @ \$0.50 to \$0.60

Shells— Shells, Empty—
Brass Shells, Empty:
First quality, all gauges, doz. 60 @ \$0.50 to \$0.60
Climax, Club, Rival, 10 and 12 gauge, doz. 65 @ \$0.50 to \$0.60

Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge, doz. 25 @ \$0.25 to \$0.30
Blue Ridge, New Climax, Challenge, Monarch, DeLancey, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge, doz. 30 @ \$0.30 to \$0.35
Climax, Union, League, New Rival 10 and 12 gauge, doz. 25 @ \$0.25 to \$0.30
Climax, Union, League, New Rival, 14, 16 and 20 gauge (\$7.50 list), doz. 30 @ \$0.30 to \$0.35
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge, doz. 35 @ \$0.35 to \$0.40
Robin Hood, Low Brass, doz. 30 @ \$0.30 to \$0.35
Robin Hood, High Brass, doz. 30 @ \$0.30 to \$0.35

Shells, Loaded—
Loaded with Black Powder, doz. 40 @ \$0.40 to \$0.50
Loaded with Smokeless Powder, medium grade, doz. 40 @ \$0.40 to \$0.50
Loaded with Smokeless Powder, high grade, doz. 40 @ \$0.40 to \$0.50
Robin Hood Smokeless Powder, doz. 50 @ \$0.50 to \$0.60
Robin Hood, Low Brass, doz. 50 @ \$0.50 to \$0.60
Comets, High Brass, doz. 50 @ \$0.50 to \$0.60

Shoes, Horse, Mule, &c.—
F. O. b., Pittsburg:
Iron, doz. per keg \$4.00
Steel, doz. per keg \$3.75
Burden's, all sizes, doz. per keg \$3.90

Shot—
Drop, up to B, 25-lb. bag, doz. \$1.60
Drop, B and larger, per 25-lb. bag, \$1.85
Buck, 25-lb. bag, doz. \$1.85
Chilled, 25-lb. bag, doz. \$1.85

Shovels and Spades—
Association List, Nov. 15, 1903, doz. 40 @ \$0.40 to \$0.50

Sieves and Sifters—
Hunter's Imitation, gro. \$10.50 to \$11.00
Buntal Metallic, S. S. Co., per gr.:
14 1/2, \$1.25
16 1/2, \$1.30
18 1/2, \$1.40
Shaker Barler's Pat. Flour Sifters, doz. \$2.00 to \$2.50

Sieves, Tin Rim— Per dozen.
Mesh, 1 1/2 16 13 20
Black, full size, \$1.20 1.35 1.50 1.75
Plated, full size, \$1.30 1.50 1.60 1.85
Black, scant, \$0.95 1.00 1.05 1.10

Sieves, Wooden Rim— Nested, 10, 11 and 12 in.
Mesh 18, Nested, doz. \$0.50 to \$0.60
Mesh 20, Nested, doz. 1.00 to \$1.05
Mesh 24, Nested, doz. 1.30 to \$1.40

Sinks— Cast Iron—
Standard list, doz. 60 @ \$0.60 to \$0.10
Note—There is not entire uniformity lists used by jobbers.

Skels Wagon—
Cast Iron, doz. 75 @ \$0.75 to \$0.10
Steel, doz. 50 @ \$0.50 to \$0.60

Slates, School— Factory Shipments.
"D" Slates, doz. 50 @ \$0.50 to \$0.60
Noiseless Slates, doz. 60 @ \$0.60 to \$0.75

Slaw Cutters—See Cutters.
Snaps, Harness—
German, doz. 40 @ \$0.40 to \$0.50
Covert Mfg. Co.:
Derby, doz. 30 @ \$0.30 to \$0.40
High Grade, doz. 45 @ \$0.45 to \$0.50
Jockey, doz. 30 @ \$0.30 to \$0.40
Trojan, doz. 45 @ \$0.45 to \$0.50
Yankee, doz. 50 @ \$0.50 to \$0.60
Yankee, Roller, doz. 30 @ \$0.30 to \$0.40

Covert's Saddlery Works:
Crown, doz. 60 @ \$0.60 to \$0.70
Model, doz. 60 @ \$0.60 to \$0.70
Triumph, doz. 60 @ \$0.60 to \$0.70
Onida Community Solid Swivel, doz. 60 @ \$0.60 to \$0.70
Sargent's Patent Guarded, doz. 60 @ \$0.60 to \$0.70

Snaths—
Scythe, doz. 45 @ \$0.45 to \$0.50
Snips, Tinners'—See Shears.
Spoons and Forks—
Silver Plated—
Good Quality, doz. 50 @ \$0.50 to \$0.60
Cheap, doz. 60 @ \$0.60 to \$0.70

International Silver Co.
1847 Rogers Bros. and Rogers & Hamilton, doz. 40 @ \$0.40 to \$0.50
Rogers & Bro., William Rogers Eagle Brand, doz. 50 @ \$0.50 to \$0.60
Anchor, Rogers Brand, doz. 60 @ \$0.60 to \$0.70
Wm. Rogers & Son, doz. 60 @ \$0.60 to \$0.70

Miscellaneous—
German Silver, doz. 60 @ \$0.60 to \$0.70
Cattaraugus Cutlery Co.:
Seneca Silver, doz. 50 @ \$0.50 to \$0.60

Tinned Iron—
Teas, doz. per gro. 45 @ \$0.45 to \$0.50
Tables, doz. per gro. 90 @ \$0.90 to \$1.00

Springs— Door—
Chicago (Coll), doz. 40 @ \$0.40 to \$0.50
Gem (Coll), doz. 30 @ \$0.30 to \$0.40
Pullman (Coll), doz. 30 @ \$0.30 to \$0.40
Reliance (Coll), doz. 40 @ \$0.40 to \$0.50
Star (Coll), doz. 30 @ \$0.30 to \$0.40
Torrey's Rod, 30 in., doz. \$1.10 to \$1.20
Victor (Coll), doz. 50 @ \$0.50 to \$0.60

Carriage, Wagon, &c.
14 in. and Wider: Per Lb.
Black, doz. 44 @ \$0.44 to \$0.50
Half Bright, doz. 44 @ \$0.44 to \$0.50
Bright, doz. 44 @ \$0.44 to \$0.50
Painted Seat Springs:
1 1/2 x 26, per pr., doz. 45 @ \$0.45 to \$0.50
1 1/2 x 28, per pr., doz. 70 @ \$0.70 to \$0.80

Sprinklers, Lawn—
Enterprise, doz. 25 @ \$0.25 to \$0.30
Philadelphia No. 1, doz. \$1.20 to \$1.30
No. 2, \$1.50 to \$1.60
No. 3, \$1.80 to \$1.90

Squares—
Nickel plated, doz. 70 @ \$0.70 to \$0.80
Steel and Iron, doz. 70 @ \$0.70 to \$0.80
Rosewood Hill Try Square and T-Bevels, doz. 60 @ \$0.60 to \$0.70
Iron Hdl. Try Squares and T-Bevels, doz. 60 @ \$0.60 to \$0.70
Dison's Try Sq. and T-Beve's, doz. 70 @ \$0.70 to \$0.80
Winterbottom's Try and Miter, doz. 40 @ \$0.40 to \$0.50

Squeezers— Lemon—
Wood, Common, gro., No. 2, \$5.25 to \$5.50
No. 1, \$5.25 to \$5.50
Wood, Porcelain Lined, doz. \$1.00 to \$1.25
Good Grade, doz. \$1.25 to \$1.50
Tinned Iron, doz. \$0.75 to \$1.25
Iron, Porcelain Lined, doz. \$1.75 to \$2.00

Staples—
Barbed Blind, doz. 6 @ \$0.60 to \$0.70
Electricians' Association list, doz. 80 @ \$0.80 to \$0.90
Fence Staples, Plain \$2.25; Galvanized, doz. \$2.50 to \$3.00
Poultry Netting, Staples, per lb., 3 1/2 @ \$0.35 to \$0.40
Grand Crossing Tack Co.'s list, doz. 80 @ \$0.80 to \$0.90

Steels, Butchers'—
Dick's, doz. 30 @ \$0.30 to \$0.40
Foster Bros', doz. 30 @ \$0.30 to \$0.40
C. & A. Hoffmann's, doz. 40 @ \$0.40 to \$0.50

Steelyards— doz. 30 @ \$0.30 to \$0.40
Stocks and Dies—
Blacksmiths', doz. 50 @ \$0.50 to \$0.60
Curtis Reversible Ratchet Die Stock, 25 @ \$0.25 to \$0.30
Derby Screw Plates, doz. 25 @ \$0.25 to \$0.30
Gardner Die Stocks, No. 1, doz. 50 @ \$0.50 to \$0.60
Gardner Die Stocks, larger sizes, doz. 40 @ \$0.40 to \$0.50
Green River, doz. 25 @ \$0.25 to \$0.30
Lighting Screw Plate, doz. 25 @ \$0.25 to \$0.30
Little Giant, doz. 25 @ \$0.25 to \$0.30
Reece's New Screw Plates, doz. 25 @ \$0.25 to \$0.30

Stone—
Scythe Stones—
Chicago Wheel & Mfg. Co.:
Gem Corundum, 6 in., \$3.00 per gro., 12 in., \$10.50
Norton Emery Scythe Stones, Less than gro. sizes, doz. \$9.00 to \$10.00
One gross or more, doz. \$7.30 to \$8.00
Lots of 10 gross or more, doz. \$6.00 to \$7.00
Pike Mfg. Co. 1901 list:
Black Diamond S. S., doz. \$12.00 to \$13.00
Lamolle S. S., doz. \$11.00 to \$12.00
White Mountain S. S., doz. \$9.00 to \$10.00
Green Mountain S. S., doz. \$8.00 to \$9.00
Extra Indian Pond S. S., doz. \$7.50 to \$8.50
No. 1 Indian Pond S. S., doz. \$7.00 to \$8.00
No. 2 Indian Pond S. S., doz. \$4.50 to \$5.50
Leader Red End S. S., doz. \$4.50 to \$5.50
Emery and Corundum, 10 in., doz. \$9.00 to \$10.00
Pure Corundum, 10 in., doz. \$9.00 to \$10.00
Crescent, doz. \$7.00 to \$8.00
Emery Scythe Rifles, Two Coat, doz. \$8.00 to \$9.00
Emery Scythe Rifles, Three Coat, doz. \$10.00 to \$11.00
Emery Scythe Rifles, Four Coat, doz. \$12.00 to \$13.00
Balance of 1904 list \$3.45

Oil Stones, &c.
Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit, doz. 50 @ \$0.50 to \$0.60
Gem Corundum Oil, Single or Double Grit, doz. 50 @ \$0.50 to \$0.60
Gem Corundum Slips, doz. 50 @ \$0.50 to \$0.60
Gem Corundum Razor Hones, doz. 50 @ \$0.50 to \$0.60
Pike Mfg. Co. 1901 list:
Arkansas Stone, No. 1, 3 to 5 in., \$2.25 to \$2.50
Arkansas Stone, No. 1, 5 to 8 in., \$3.50 to \$4.00
Arkansas Stone, No. 1, 8 to 10 in., \$4.00 to \$4.50
Lily White Washita 4 to 8 in., 60 @ \$0.60 to \$0.70
Rosy Red Washita, 4 to 8 in., 60 @ \$0.60 to \$0.70
Washita Stone, Extra, 4 to 8 in., 50 @ \$0.50 to \$0.60
Washita Stone, No. 1, 4 to 8 in., 40 @ \$0.40 to \$0.50
Washita Stone, No. 2, 4 to 8 in., 30 @ \$0.30 to \$0.40
Lily White Slips, 90 @ \$0.90 to \$1.00
Rosy Red Slips, 90 @ \$0.90 to \$1.00
Washita Slips, Extra, 80 @ \$0.80 to \$0.90
Washita Slips, No. 1, 70 @ \$0.70 to \$0.80
Washita Slip, No. 2, 40 @ \$0.40 to \$0.50
India Oil Stones (entire list), 33 1/2 @ \$0.33 1/2 to \$0.40
Quickcut Emery and Corundum Oil Stone, Double Grit, doz. 50 @ \$0.50 to \$0.60
Quickcut Emery and Corundum Aze Stone, Single or Double Grit, doz. 33 1/2 @ \$0.33 1/2 to \$0.40
Quickcut Emery Rubbing Brcks, 33 1/2 @ \$0.33 1/2 to \$0.40

Hindustan No. 1, Regular, doz. 8 @ \$0.80 to \$0.90
Hindustan No. 1, Small, doz. 8 @ \$0.80 to \$0.90
Axe Stones (all kinds), doz. 8 @ \$0.80 to \$0.90
Turkey Oil Stones, ex. 5 to 8 in., doz. 8 @ \$0.80 to \$0.90
Queer Creek Stones, 4 to 8 in., doz. 8 @ \$0.80 to \$0.90
Queer Creek Slips, doz. 8 @ \$0.80 to \$0.90
Sand Stone, doz. 8 @ \$0.80 to \$0.90
Belgian, German and Swaty Razor Hones, doz. 50 @ \$0.50 to \$0.60
Natural Grit Carving Knife Hones, doz. 8 @ \$0.80 to \$0.90
Quick Edge Pocket Knife Hones, doz. 8 @ \$0.80 to \$0.90
Mounted Kitchen Sand Stone, doz. 8 @ \$0.80 to \$0.90
Stoners— Cherry— Enterprise, doz. 25 @ \$0.25 to \$0.30

Stoppers— Bottle—
Victor Bottle Stoppers, doz. \$9.00 to \$10.00
Stops, Bench—
Mullers Falls, doz. 15 @ \$0.15 to \$0.20
Morrell's, No. 1, \$10.00, doz. 50 @ \$0.50 to \$0.60
Morrell's, No. 2, \$12.50, doz. 50 @ \$0.50 to \$0.60

Door—
Chapin-Stephens Co., doz. 60 @ \$0.60 to \$0.70
Plane—
Chapin-Stephens Co., doz. 3 @ \$0.30 to \$0.40

Straps— Box—
Cary's Universal, case lots, 20 @ \$0.10 to \$0.15
Hame—
Covert's Saddlery Works, doz. 60 @ \$0.60 to \$0.70

Stretchers, Carpet—
Cast Iron, Steel Points, doz. 55 @ \$0.55 to \$0.60
Socket, doz. \$1.75 to \$2.00

Stuffers, Sausage—
Enterprise Mfg. Co., doz. 25 @ \$0.25 to \$0.30
National Specialty Mfg. Co., list Jan. 1, 1904, doz. 30 @ \$0.30 to \$0.40

Sweepers, Carpet— Per doz.
National Sweeper Co.:
Auditorium, Roller Bearing (26 in. case), Nickel, doz. \$54.00 to \$55.00
Mammoth, Roller Bearing (30 in. case), Nickel, doz. \$60.00 to \$61.00
Marion, Roller Bearing, regular finishes, full Nickel, doz. \$24.00 to \$25.00
Marion Queen, Roller Bearing, full Nickel, doz. \$24.00 to \$25.00
Monarch, Roller Bearing, Nickel, doz. \$22.00 to \$23.00
Monarch, Roller Bearing, Jap. red, doz. \$24.00 to \$25.00
Transparent, Roller Bearing, Plate Glass Top, Nickel, doz. \$86.00 to \$87.00
Monarch Extra, Roller Bearing, (17-inch case), Nickel, doz. \$36.00 to \$37.00
Monarch Extra, Roller Bearing (17-inch case), Japanned, doz. \$38.00 to \$39.00
National Queen, Fancy Veneers, doz. \$27.00 to \$28.00
Perpetual, Regular Bearings, Nk, \$20.00 to \$21.00
Perpetual, Regular Bearings, Jap, \$15.00 to \$16.00
Note—Rebates: 30c per dozen on three-dozen lots; \$1 per dozen on five-dozen lots; \$2 per dozen on ten-dozen lots, \$2.50 per dozen on twenty-five-dozen lots.

Tacks, Brads, &c.— List Jan. 15, '99,
Carpet Tacks, doz. 90 @ \$0.90 to \$1.00
American Cut Tacks, doz. 90 @ \$0.90 to \$1.00
Swedes Cut Tacks, doz. 90 @ \$0.90 to \$1.00
Swedes Upholsterers' Tacks, doz. 90 @ \$0.90 to \$1.00
Gimp Tacks, doz. 90 @ \$0.90 to \$1.00
Lace Tacks, doz. 90 @ \$0.90 to \$1.00
Trimmers' Tacks, doz. 90 @ \$0.90 to \$1.00
Looking Glass Tacks, doz. 90 @ \$0.90 to \$1.00
Lift Posters and Railroad Tacks, doz. 90 @ \$0.90 to \$1.00
Hungarian Nails, doz. 90 @ \$0.90 to \$1.00
Common and Patent Brads, doz. 90 @ \$0.90 to \$1.00
Trunk and Clout Nails, doz. 90 @ \$0.90 to \$1.00
Note—The above prices are for Straight Weights. An extra 10c is given Star Weights and an extra 10c to 15c on Standard Weights.

Miscellaneous—
Double Pointed Tacks, 30 @ \$0.30 to \$0.40
Steel Wire Brads, R. & E. Mfg. Co.'s list, doz. 90 @ \$0.90 to \$1.00

See also Nails, Wire.
Tanks, Oil—
Emerald, S. S. & Co., 30-gal, \$3.40 to \$3.50
Emerald, S. S. & Co., 60-gal, \$4.25 to \$4.35
Queen City S. S. & Co., 30-gal, \$3.65 to \$3.75
Queen City S. S. & Co., 60-gal, \$4.50 to \$4.60

Tapes, Measuring—
American Asses' Skin, 40 @ \$0.40 to \$0.50
Patent Leather, 25 @ \$0.25 to \$0.30
Steel, 40 @ \$0.40 to \$0.50
Chesterman's, 25 @ \$0.25 to \$0.30
Eddy Asses' Skin, 40 @ \$0.40 to \$0.50
Eddy Patent Leather, 25 @ \$0.25 to \$0.30
Eddy Steel, 40 @ \$0.40 to \$0.50
Keuffel & Esser Co. Steel and Metallic, Lower list, 1903, doz. 35 @ \$0.35 to \$0.40
Larkin's Steel, 33 1/2 @ \$0.33 1/2 to \$0.40
Larkin's Metallic, 30 @ \$0.30 to \$0.40

Teeth, Harrow—
Steel Harrow Teeth, plain or headed, 1/2-inch and larger, per 100 lbs., \$3.00 to \$3.50

Thermometers—
Tin Case, doz. 80 @ \$0.80 to \$0.90
Ties, Bale—Steel Wire.
Single Loop, doz. 82 @ \$0.82 to \$0.90
Monitor, Cross Head, Etc., doz. 70 @ \$0.70 to \$0.80

Brick Ties—
Niagara Brick Ties, doz. 30 @ \$0.30 to \$0.40

Tinners' Shears, &c.— See Shears, Tinners', &c.
Tinware—
Stamped, Japanned and Plated, sold very generally at net prices.

Tips, Safety Pole—
Covert's Saddlery Works, doz. 60 @ \$0.60 to \$0.70

Tire Benders, Upsetters, &c.— See Benders and Upsetters, Tire.

AUGUST 3, 1904.